The Architects' JOURNAL for March 6, 1958

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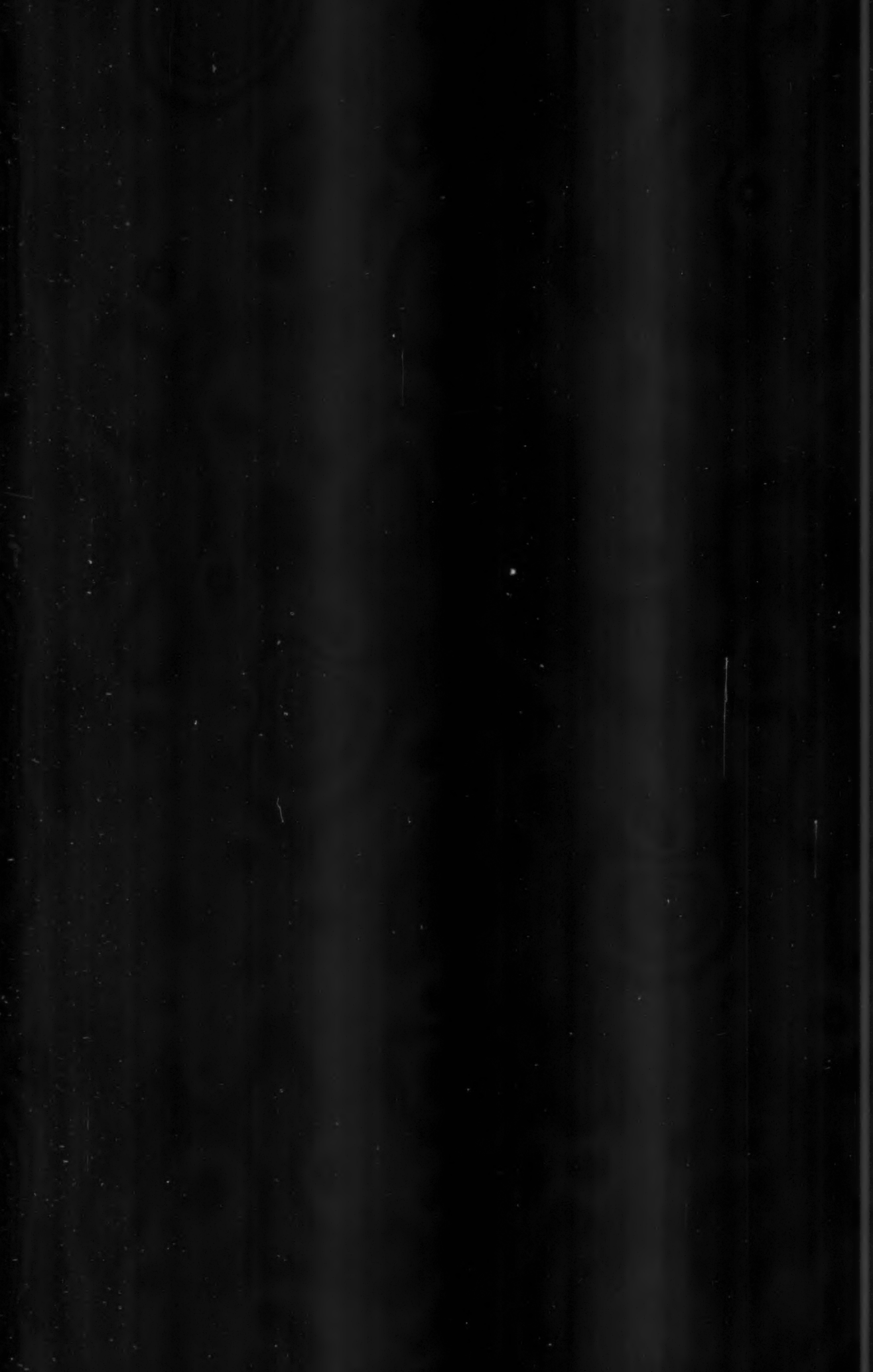
★ A glossary of abbreviations of Government Departments and Societies and Committees of all kinds, together with their full address and telephone numbers. The glossary is published in two parts—A to Ig one week, Ih to Z the next. In all cases where the town is not mentioned the word LONDON is implicit in the address.

IHVE	Institution of Heating and Ventilating Engineers. 49, Cadogan Square.	Sloane 1601/3158
IIBDID	Incorporated Institute of British Decorators and Interior Designers. 100, Park Street, Grosvenor Square, W.1.	Mayfair 7086
ILA	Institute of Landscape Architects, 2, Guilford Place, W.C.1.	Holborn 0281
I of Arb	Institute of Arbitrators. Hastings House, 10, Norfolk Street, Strand, W.C.2.	Temple Bar 4071
IOB	Institute of Builders. 48, Bedford Square, W.C.1.	Museum 7179
IQS	Institute of Quantity Surveyors. 98, Gloucester Place, W.1.	Welbeck 1859
IR	Institute of Refrigeration. Dalmeny House, Monument Street, E.C.3.	Avenue 6851
IRA	Institute of Registered Architects. 47, Victoria Street, S.W.1.	Abbey 6172
ISE	Institute of Structural Engineers. 11, Upper Belgrave Street, S.W.1.	Sloane 7128
LDA	Lead Development Association. 18, Adam Street, W.C.2	Whitehall 4175
LMBA	London Master Builders' Association. 47, Bedford Square, W.C.1.	Museum 3891
LSPC	Lead Sheet and Pipe Council. Eagle House, Jermyn Street, S.W.1.	Whitehall 7264/4175
MAFF	Ministry of Agriculture, Fisheries and Food. Whitehall Place, S.W.1.	Trafalgar 7711
MOE	Ministry of Education. Curzon Street House, Curzon Street, W.1.	Mayfair 9400
MOH	Ministry of Health. 23, Savile Row, W.1.	Regent 8411
MOHLG	Ministry of Housing and Local Government. Whitehall, S.W.1.	Whitehall 4300
MOLNS	Ministry of Labour and National Service. 8, St. James' Square, S.W.1.	Whitehall 6200
MOS	Ministry of Supply. Shell Mex House, W.C.2.	Gerrard 6933
MOT	Ministry of Transport. Berkeley Square House, Berkeley Square, W.1.	Mayfair 9494
MOW	Ministry of Works. Lambeth Bridge House, S.E.1.	Reliance 7611
NAMMC	Natural Asphalte Mine Owners and Manufacturers Council. 94/98, Petty France, S.W.1.	Abbey 1010
NAS	National Association of Shopfitters. 9, Victoria Street, S.W.1.	Abbey 4813
NBR	National Buildings Record. 31, Chester Terrace, Regent's Park, N.W.1.	Welbeck 0619
NCBMP	National Council of Building Material Producers, 10, Storey's Gate, S.W.1.	Abbey5111
NEFMAI	National Employers Federation of the Mastic Asphalt Industry. 21, John Adam Street, Adelphi, W.C.2.	Trafalgar 3927
NFBTE	National Federation of Building Trades Employers. 82, New Cavendish Street, W.1.	Langham 4041/4054
NFBTO	National Federation of Building Trades Operatives. Federal House, Cedars Road, Clapham, S.W.4.	Macaulay 4451
NFHS	National Federation of Housing Societies. 12, Suffolk St., S.W.1.	Whitehall 1693
NHBRC	National House Builders Registration Council. 58, Portland Place, W.1.	Langham 0064/5
NPL	National Physical Laboratory. Head Office, Teddington.	Molesey 1380
NRDB	Natural Rubber Development Board. Market Buildings, Mark Lane, E.C.3.	Mansion House 9383
NSAS	National Smoke Abatement Society. Palace Chambers. Bridge Street, S.W.1.	Trafalgar 6838
NT	National Trust for Places of Historic Interest or Natural Beauty. 42, Queen Anne's Gate, S.W.1.	Whitehall 0211
PEP	Political and Economic Planning. 16, Queen Anne's Gate, S.W.1.	Whitehall 7245
RCA	Reinforced Concrete Association. 94, Petty France, S.W.1.	Abbey 4504
RIAS	Royal Incorporation of Architects in Scotland. 15, Rutland Square, Edinburgh.	Fountainbridge 7631
RIBA	Royal Institute of British Architects. 66, Portland Place, W.1.	Langham 5533
RICS	Royal Institution of Chartered Surveyors. 12, Great George Street, S.W.1.	Whitehall 5322/9242
RFAC	Royal Fine Art Commission. 5, Old Palace Yard, S.W.1.	Whitehall 3935
RS	Royal Society. Burlington House, Piccadilly, W.1.	Regent 3335
RSA	Royal Society of Arts. 6, John Adam Street, W.C.2.	Trafalgar 2366
RSH	Royal Society of Health. 90, Buckingham Palace Road, S.W.1.	Sloane 5134
RIB	Rural Industries Bureau. 35, Camp Road, Wimbledon, S.W.19.	Wimbledon 5101
SBPM	Society of British Paint Manufacturers. Grosvenor Gardens House, Grosvenor Gardens, S.W.1	Victoria 2186
SE	Society of Engineers. 17, Victoria Street, Westminster, S.W.1.	Abbey 7244
SFMA	School Furniture Manufacturers' Association. 30, Cornhill, London, E.C.3.	Mansion House 3921
SIA	Society of Industrial Artists. 7, Woburn Square, London, W.C.1.	Langham 1984/5
SIA	Structural Insulation Association. 32, Queen Anne Street, W.1	Langham 7616
SNHTPC	Scottish National Housing. Town Planning Council. Hon. Sec., Robert Pollock, Town Clerk, Rutherglen	
SPAB	Society for the Protection of Ancient Buildings. 55, Great Ormond Street, W.C.1.	Holborn 2646
TCPA	Town and Country Planning Association. 28, King Street, Covent Garden, W.C.2.	Temple Bar 5006
TDA	Timber Development Association. 21, College Hill, E.C.4.	City 4771
TPI	Town Planning Institute. 18, Ashley Place, S.W.1.	Victoria 8815
TTF	Timber Trades Federation. 75, Cannon Street, E.C.4.	City 5040
WDC	War Damage Commission. 6, Carlton House Terrace, S.W.1.	Whitehall 4341
ZDA	Zinc Development Association. 34, Berkeley Square, W.1.	Grosvenor 6636



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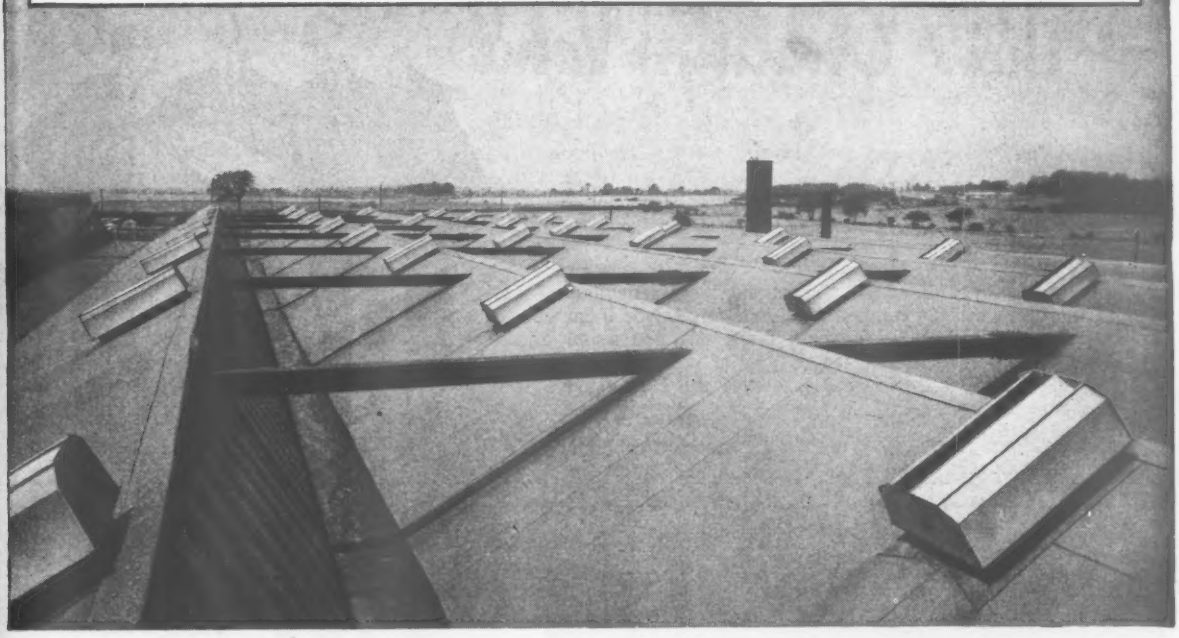

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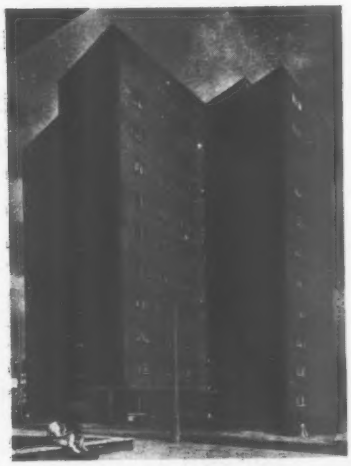
LAW COURTS — SLOUGH, BUCKS
Architect: Frederick Pooley

BUILDINGS OF THE YEAR: 1957

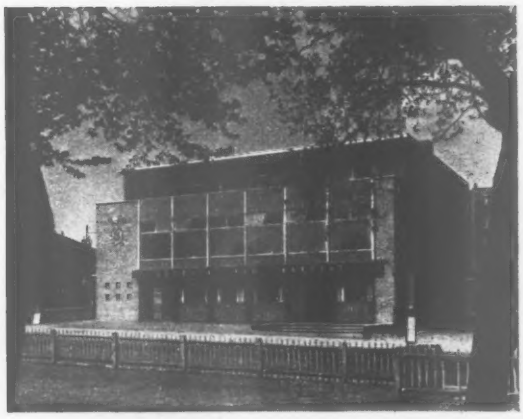
Each of the Buildings illustrated on this page was chosen by the Architects' Journal for their list of 'Buildings of the year : 1957'. Another feature in common is that each Building has had one or more of the Cementone Range of products—colours, hardeners, waterproofers and decorative finishes—used in its construction or decoration.

T.U.C. MEMORIAL BUILDING
Architects: David Du R. Aberdeen & Ptnrs.

BOWATER-SCOTT TISSUE MILL
Architects: Farmer & Dark



CLAREMONT ESTATE — WEST HAM
Architect: Thomas E. North



KING'S ARMS — PECKHAM
Architects: Westwood Sons & Harrison

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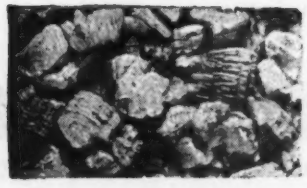

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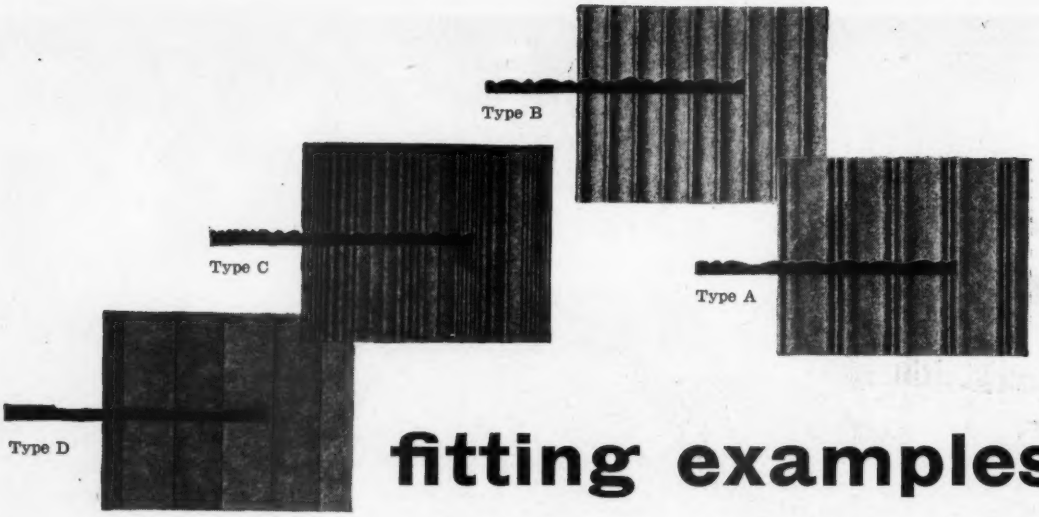
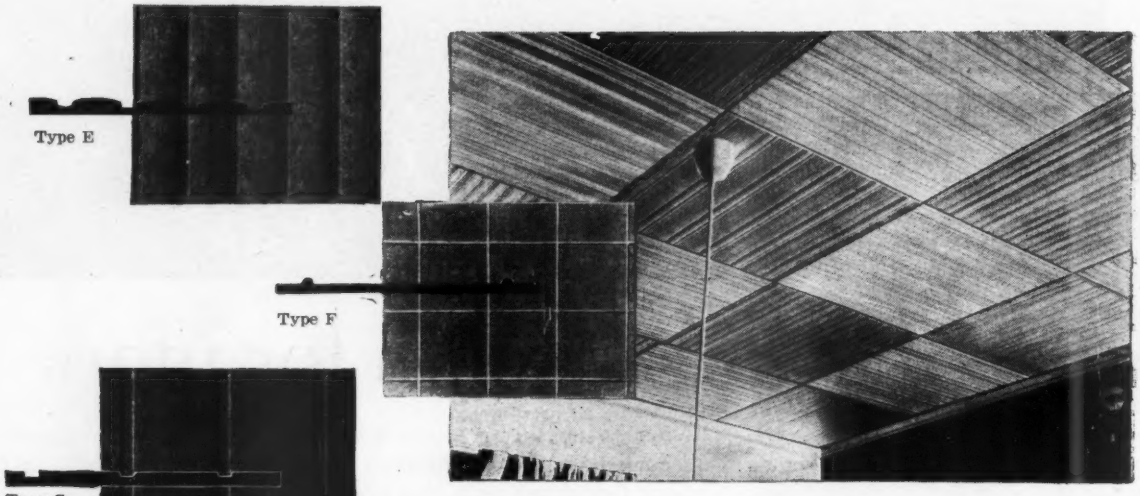


fitting examples...



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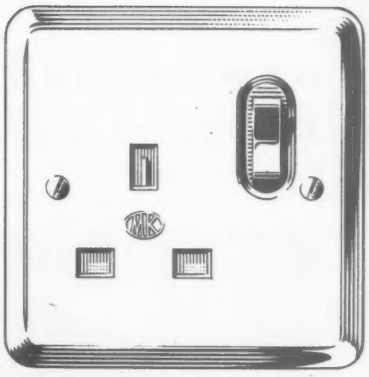

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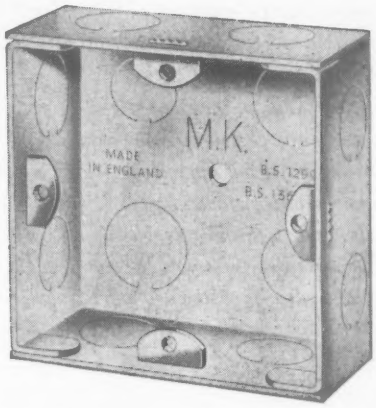

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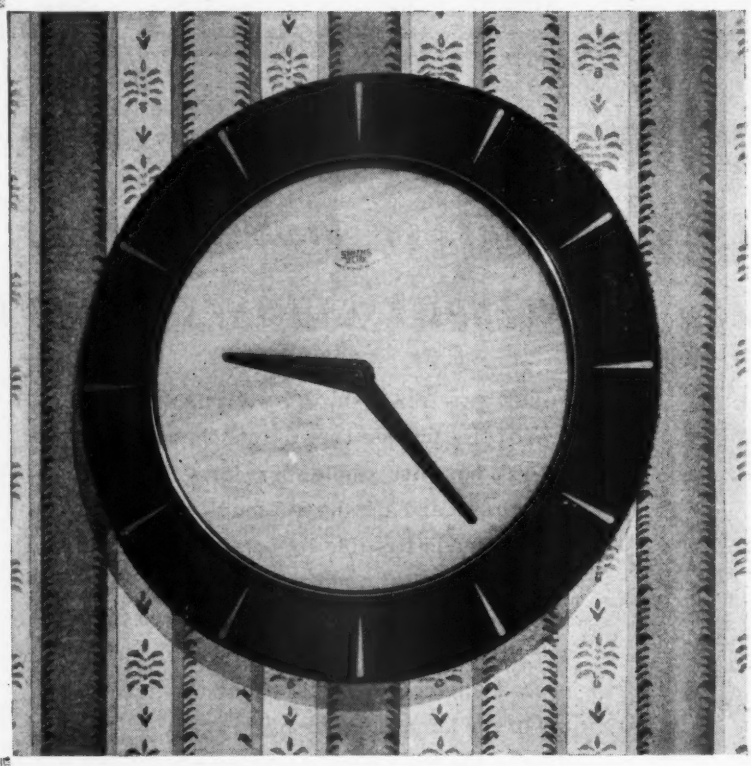

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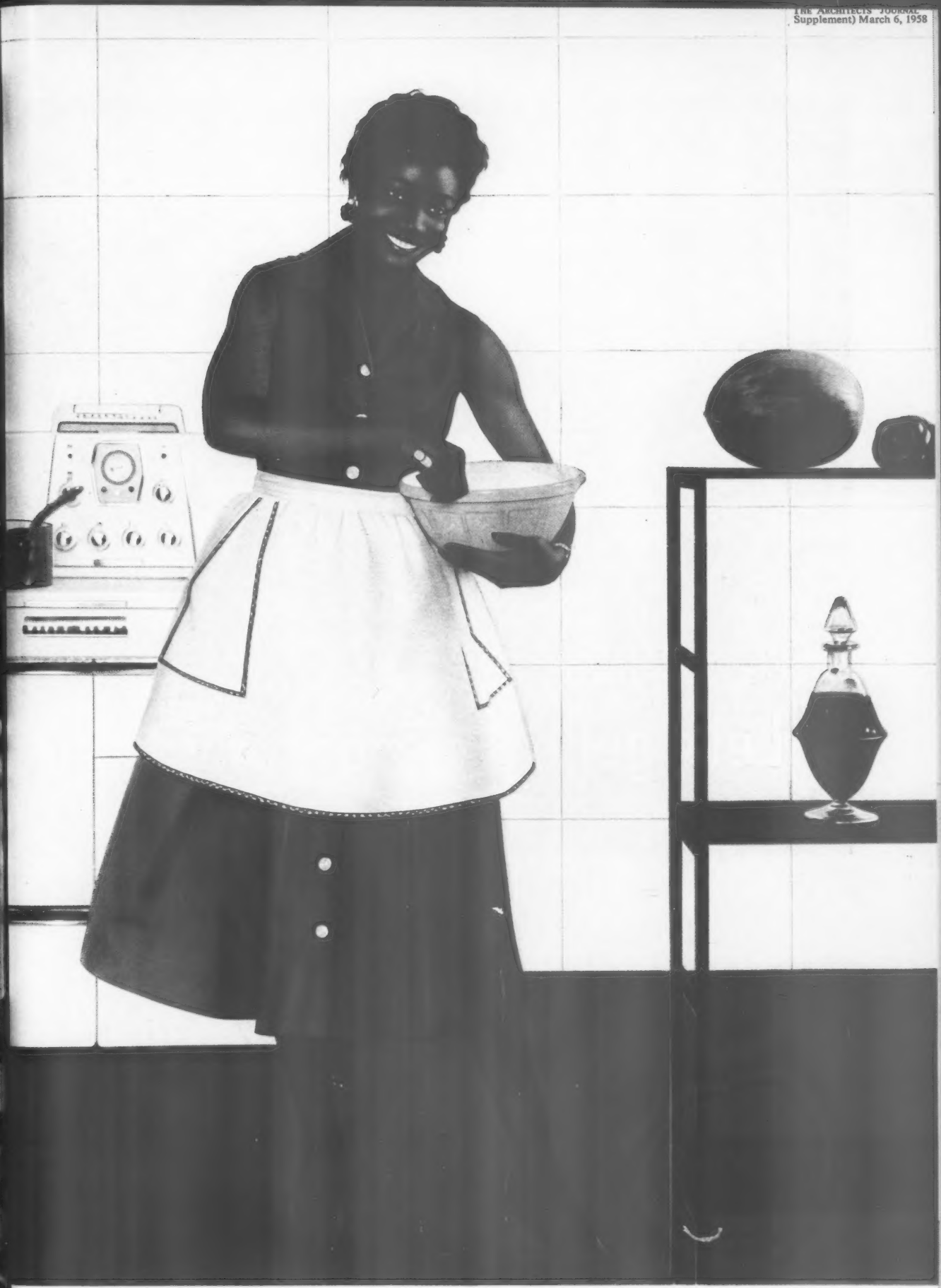

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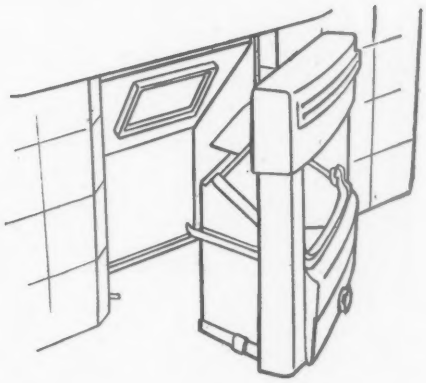
New—a convector that fits exactly into existing high and low fire openings the RAYBURN No. 2 convector fire

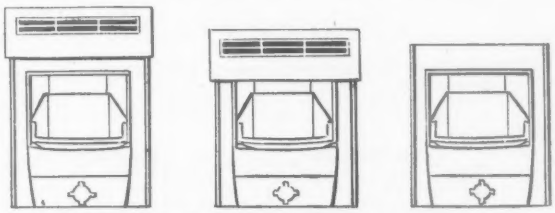


New indeed—a convector that fits nearly every fireplace in the country, provided the fire opening is 16″ wide.

The latest addition to the Rayburn range of convector fires has been designed as a replacement fitting. As more and more people are realising the value of convectors and converting to them, the important question of *appearance* has arisen. Convectors are usually made as a unit, and fit snugly against the modern flat-fronted fireplaces. But there are many fireplaces with a low overhang, and unless the fire *happens* to fit underneath it exactly, there is an unsightly gap and trouble in making a proper seal. The Rayburn No. 2 convector overcomes this difficulty.

A back-plate seals into the fireplace, leaving only a flue-opening. The fire flue itself makes a seal at the flue-opening, and between the fire and the back-plate the convection chamber is formed. That in itself is a unique construction.

And the size adjustment? The RAYBURN No. 2 convector has an adjustable head. With it fixed high, the whole fire stands 24½″: with it fixed low, 21½″—and it can be fixed anywhere between those heights. And for a very low fireplace it can be removed altogether, when the height will be 19½″.



Here's how the fire looks with the various adjustments—with the head fully raised—fully lowered—off altogether.

You as an expert can explain how convection works and how valuable it is—and your arguments will be backed up by the Rayburn.

The Rayburn has all the other outstanding features of its series. A restrictable throat keeps the flue-opening to its minimum, and spinwheel air control regulates the rate of burning. An extension piece (optional) is used for all-night burning. There is a deepening bar above the fire front. A special portable gas igniter to clip into the ashpit can also be supplied. Available in a choice of seven colours.

Space heating capacity for rooms up to 1,750 cu. ft.

For further details of the Rayburn No. 2 convector fire write to the Housing Division of

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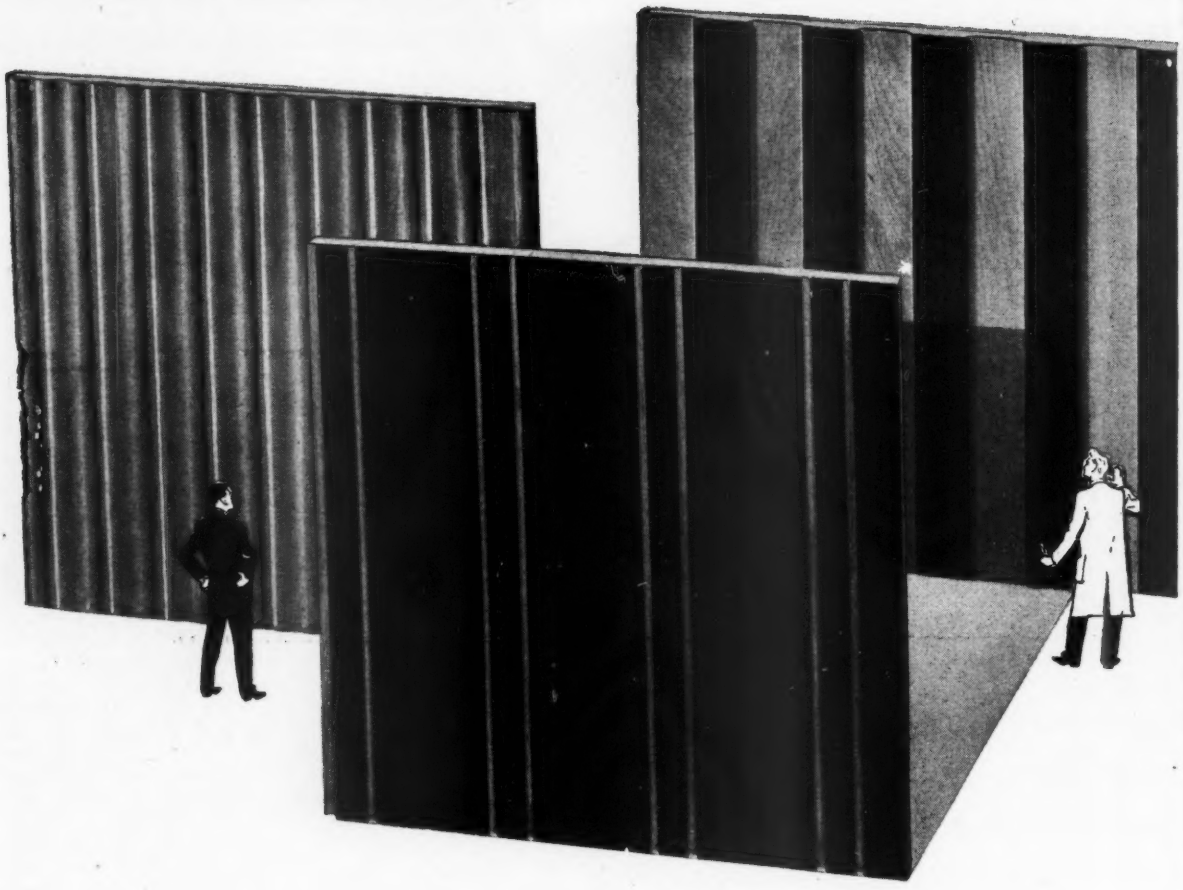

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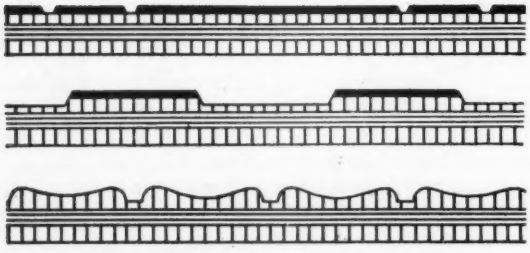

These are full-size cross-sections of the PLYFA PROFIL *examples illustrated above.*

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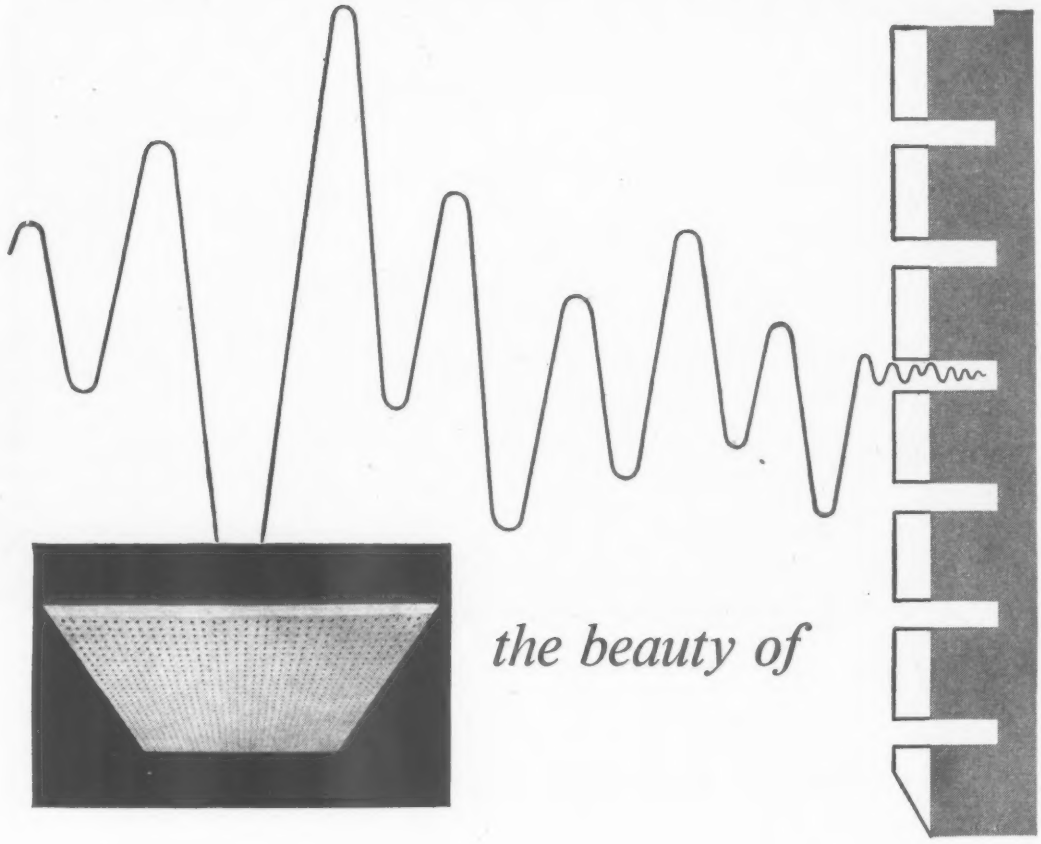

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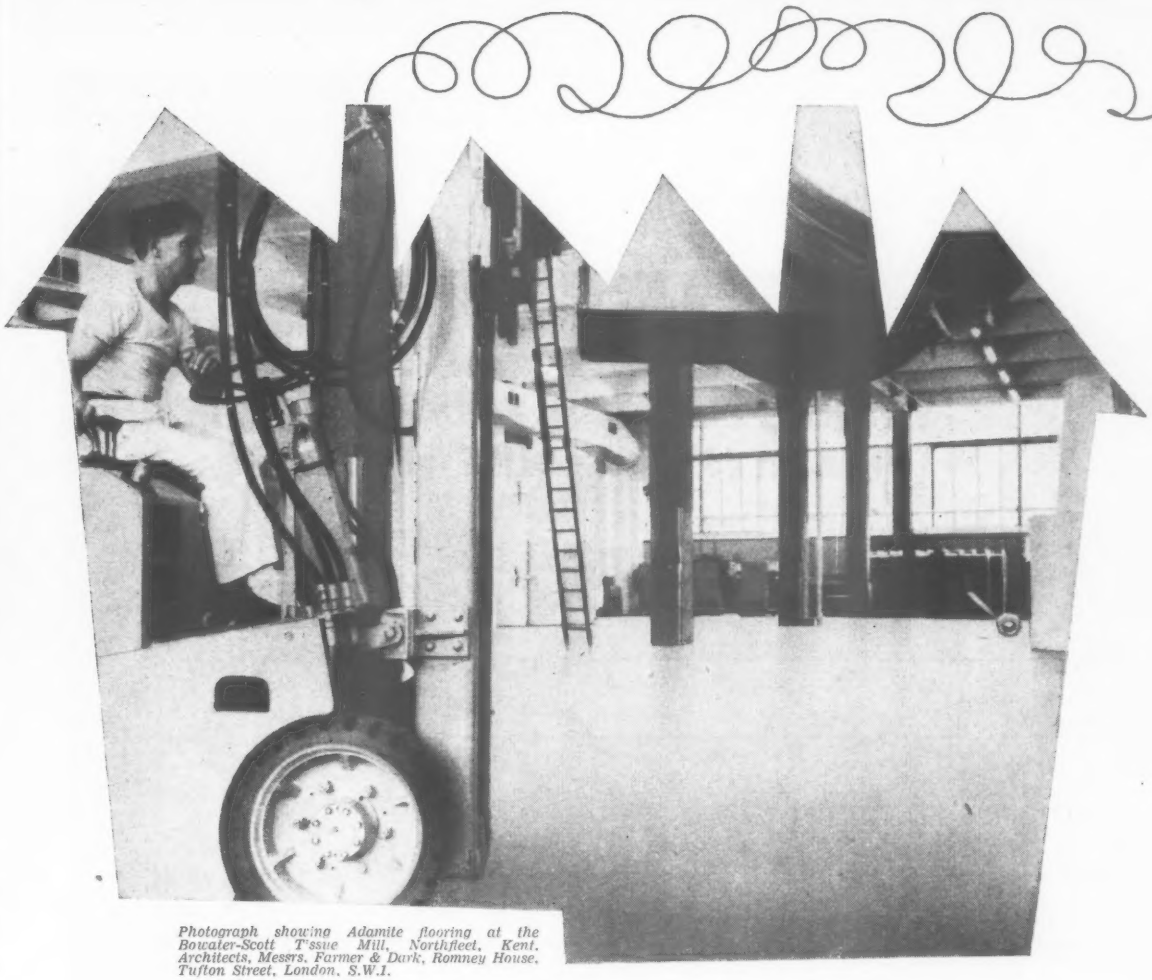

Photograph showing Adamite flooring at the Bowater-Scott Tissue Mill, Northfleet, Kent. Architects, Messrs. Farmer & Dark, Romney House, Tufton Street, London, S.W.1.

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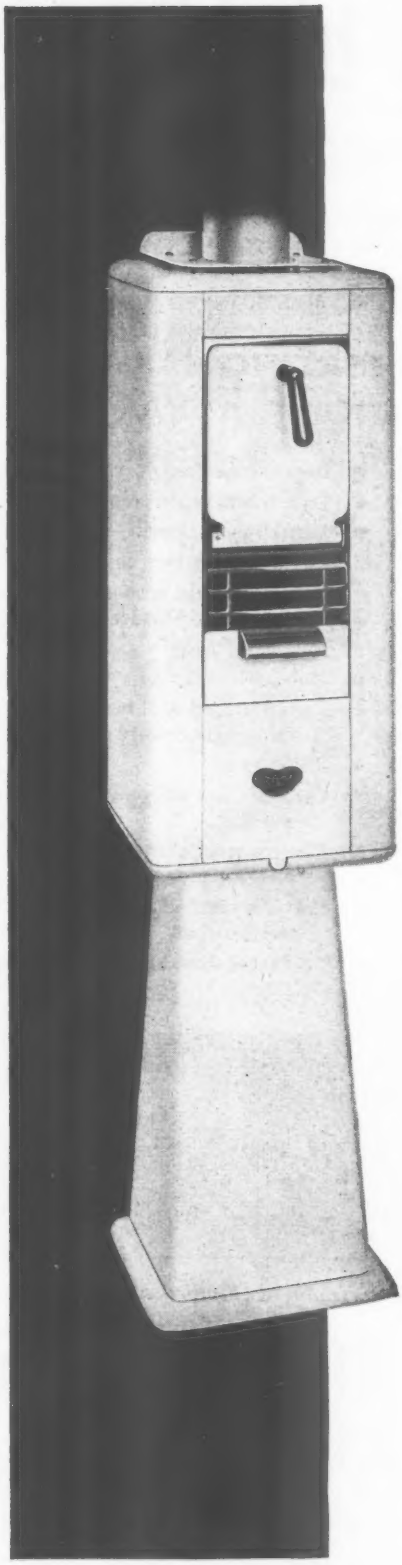

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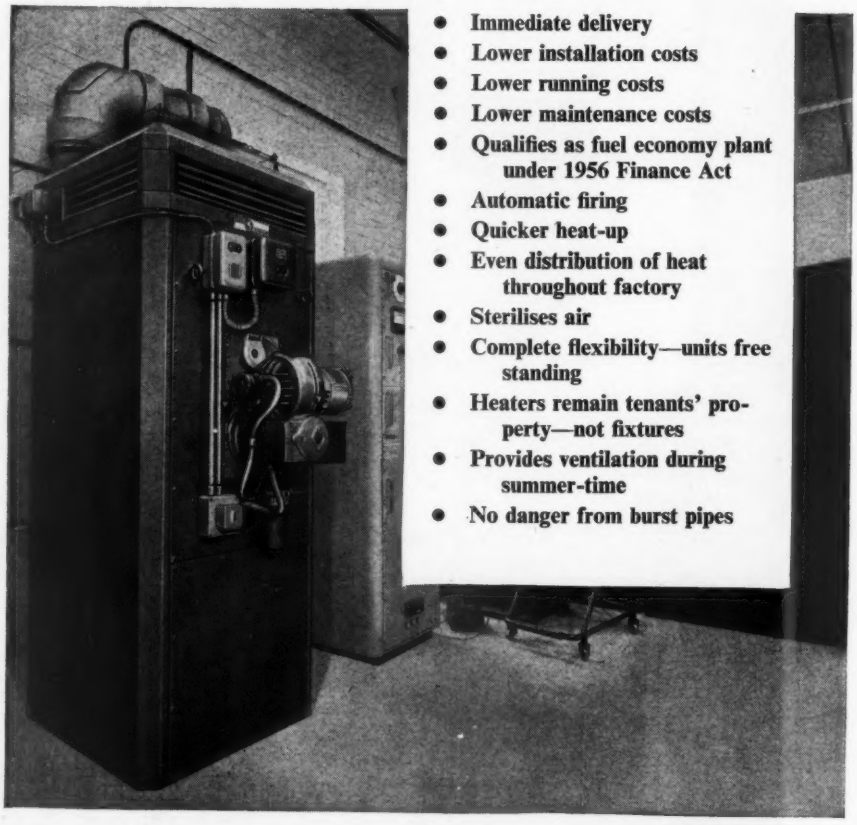

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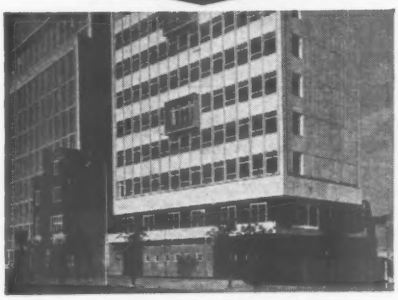

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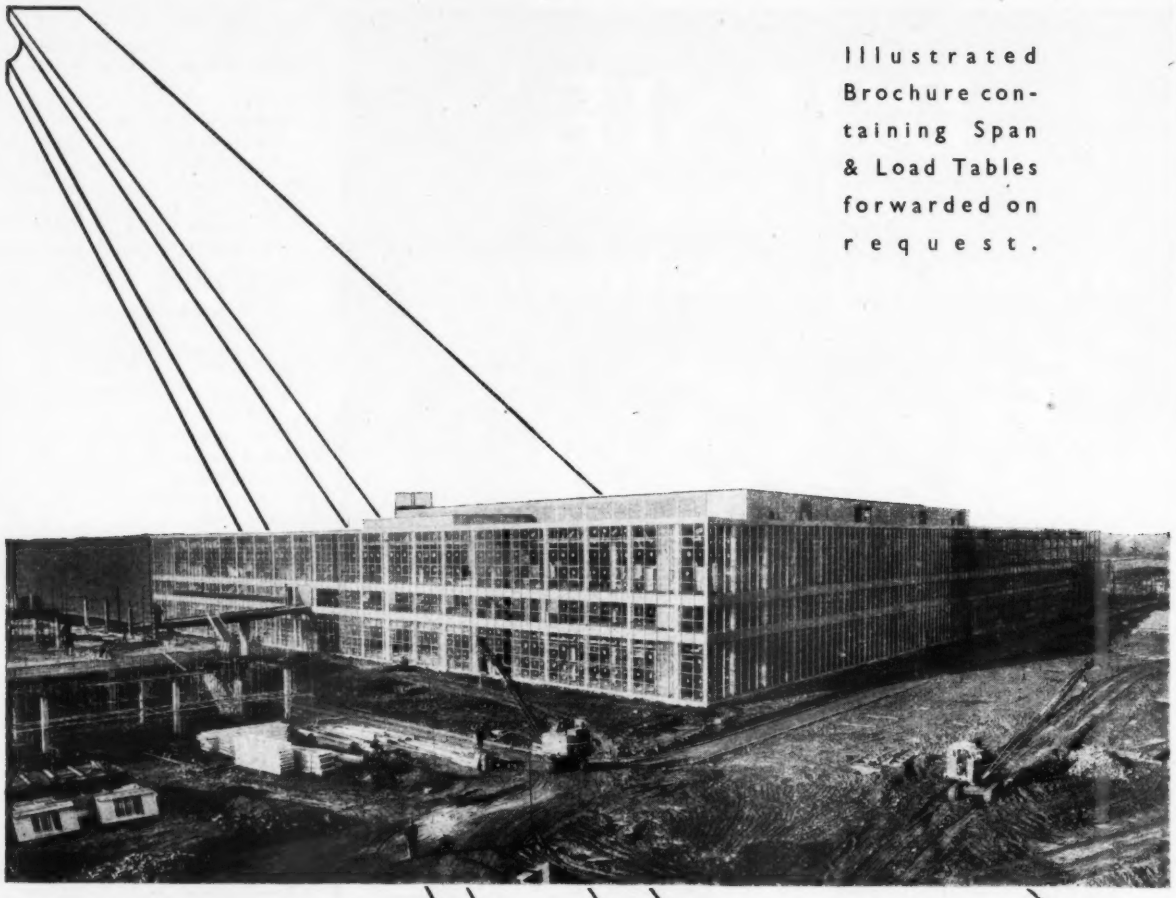

Illustrated Brochure containing Span & Load Tables forwarded on request.

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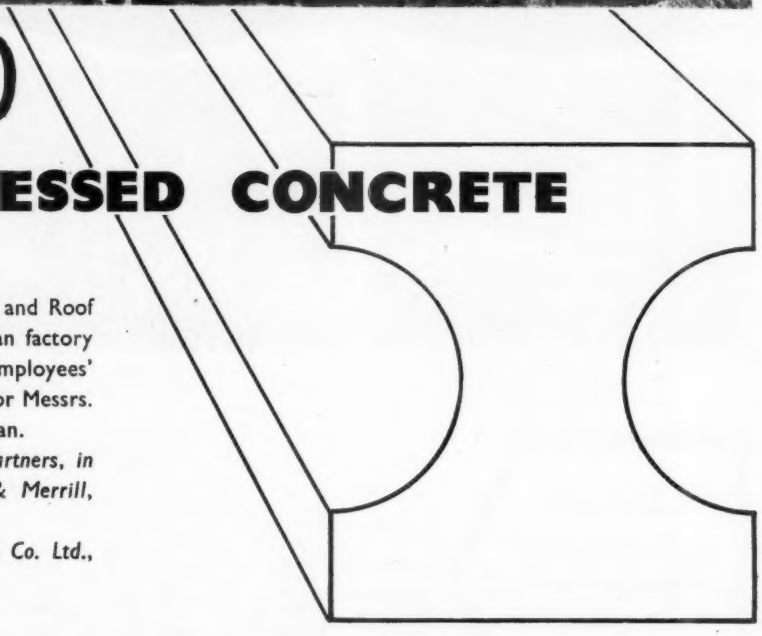

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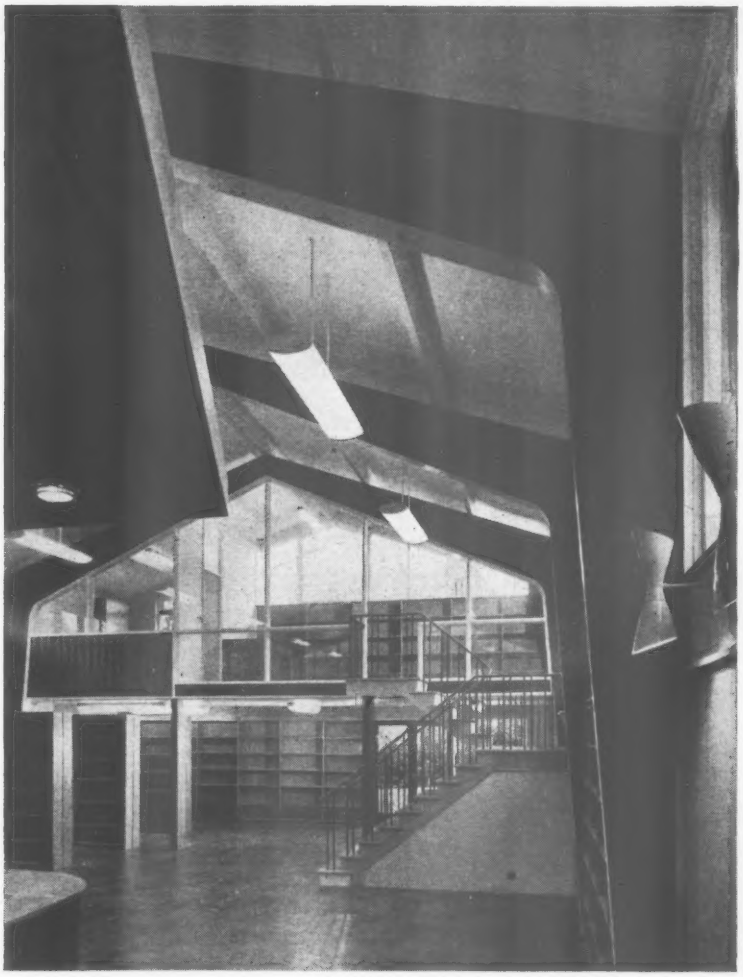

(Photograph by courtesy of Frederick B. Pooley, F.R.I.B.A., A.M.T.P.I., A.M.I.Struct.E., Buckinghamshire County Architect)

Supporting evidence

The inherent beauty and simplicity of this new library at Beaconsfield owe much to the design of the timber structures. The three-hinged frames shown in our photograph were built to the design and patent specifications of Mr. D. W. Cooper, B.Sc., A.M.I.Struct.E., by F. & H. Sutcliffe Limited, using Aerolite 300 resin glue to bond plywood webs rigidly to Douglas fir and withstand the considerable bending stresses involved. Aerolite 300 has proved particularly suitable for structures such as these. It is cold-setting, outstanding in strength and durability, simple and economical to use—and it is gap-filling, which avoids the need for high clamping pressures during setting. Glued Portal Frames are described in detail in *Aero Research Technical Notes* No. 175, July, 1957. May we send you a copy?

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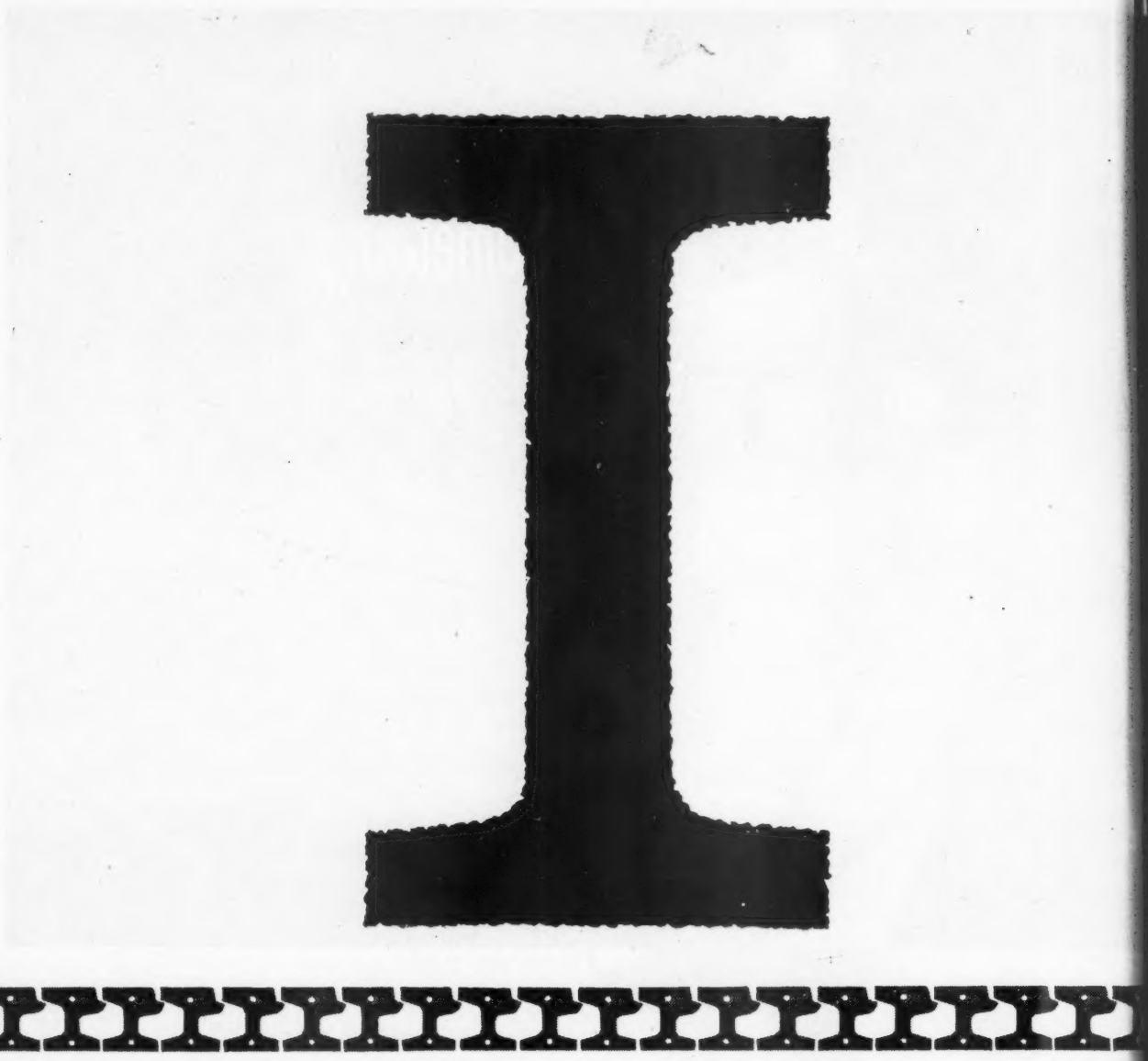

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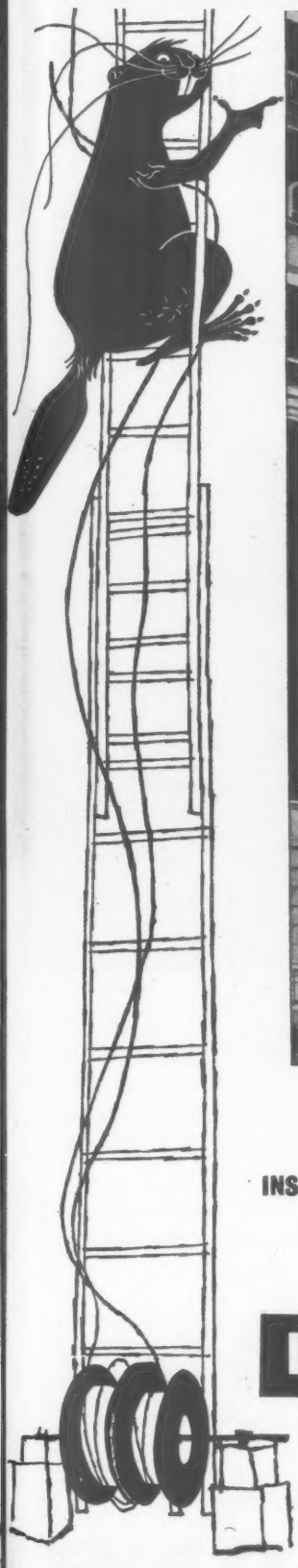

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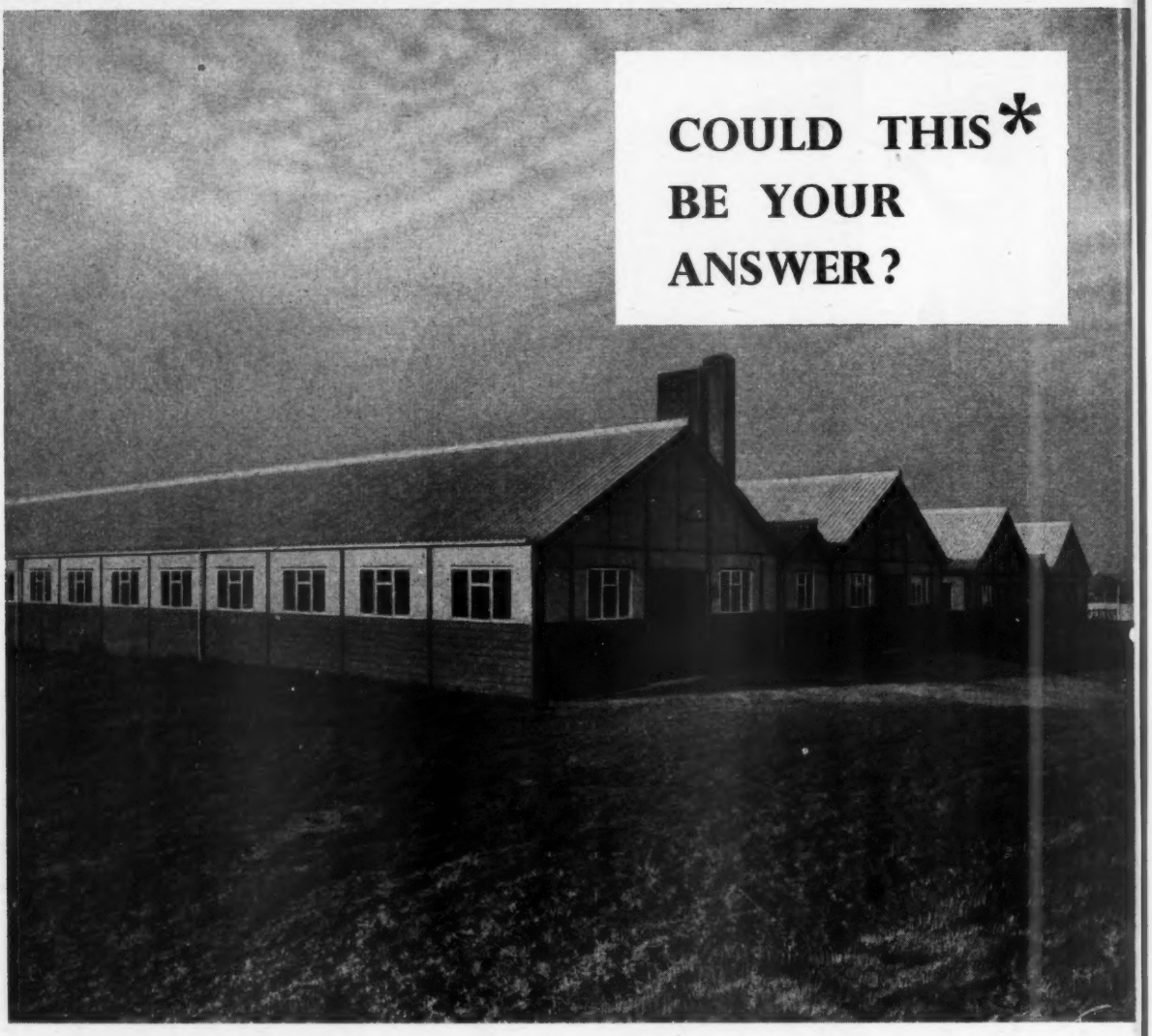
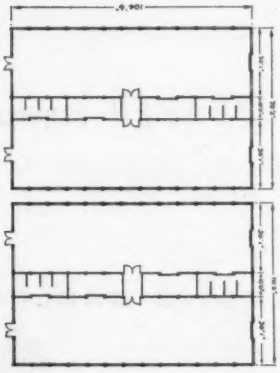


Photograph by courtesy of Stoke Manderville Hospital, Buckinghamshire.



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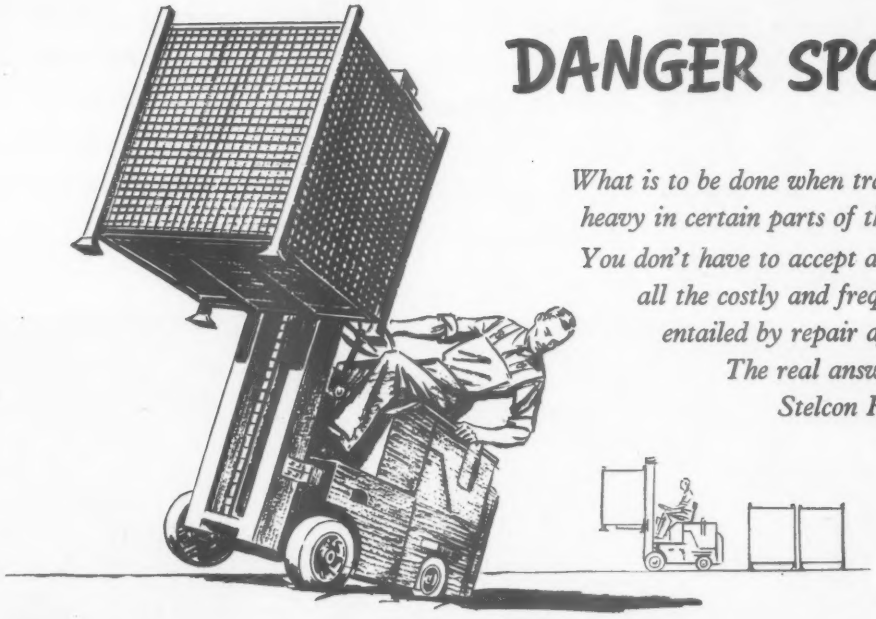

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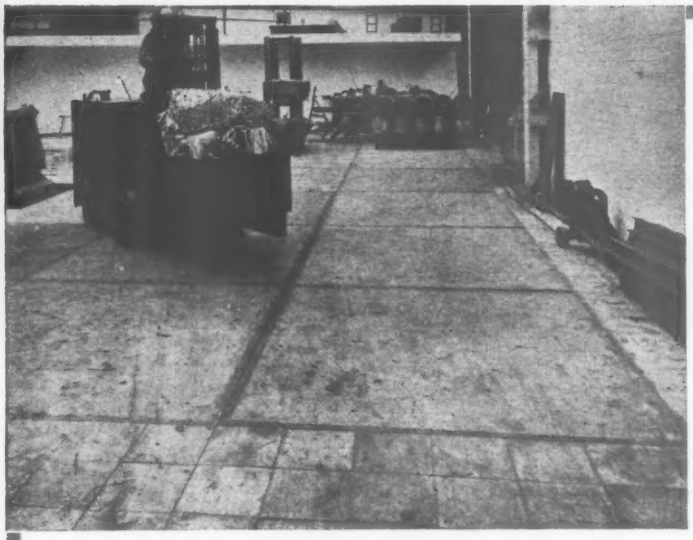
What is to be done when traffic is very heavy in certain parts of the factory? You don't have to accept as inevitable all the costly and frequent delays entailed by repair after repair. The real answer is to lay Stelcon Raft Floors.



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Thomas S. Cordiner F.R.I.B.A.

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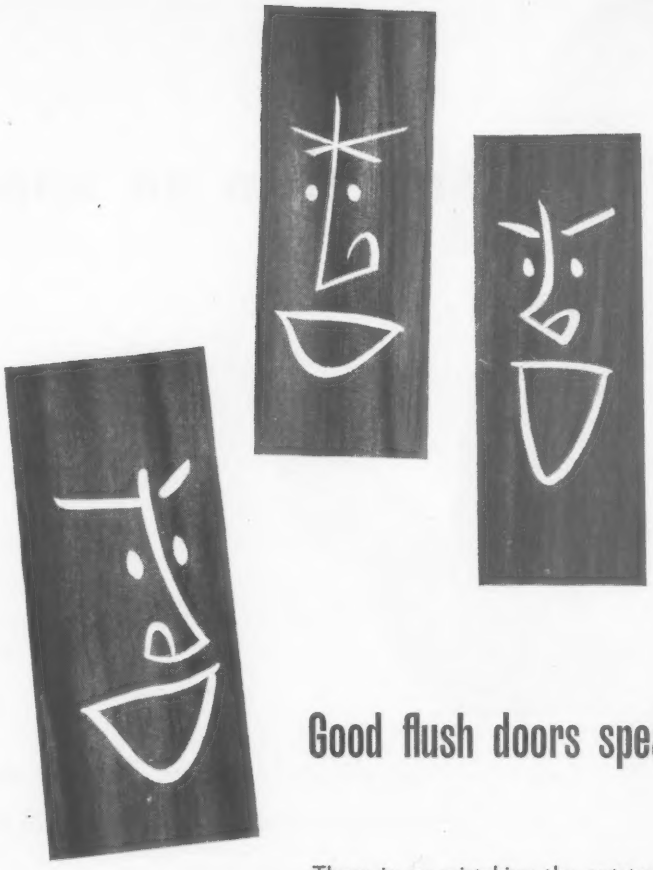

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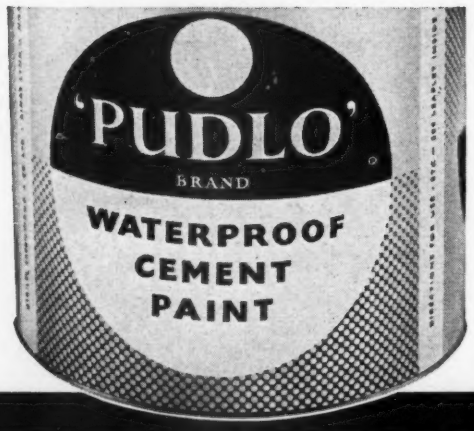

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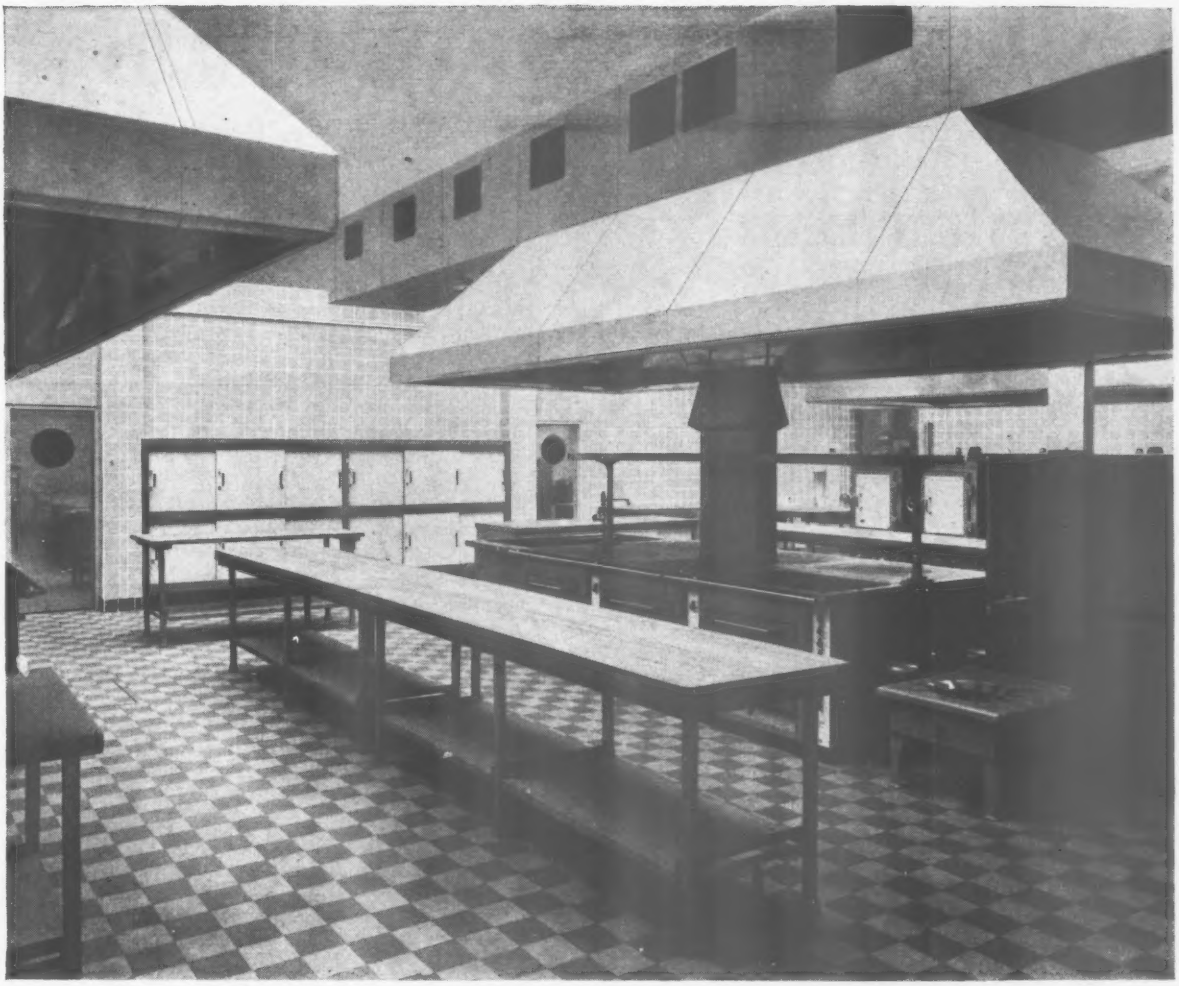

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The surface that is so essentially hygienic and impervious to dirt, stains and steam. A mere wipe and Ceramic tiles become sparkling and bright . . . more important still Ceramic tiles reduce maintenance costs to a minimum.

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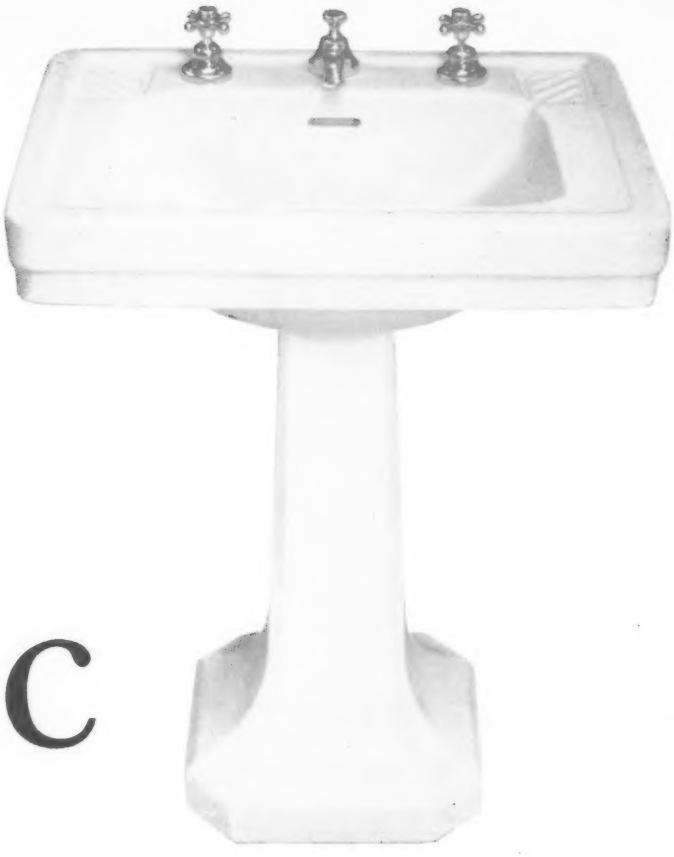

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Whilst the beauty of these appliances can be appreciated at a glance, it takes a lifetime to discover how durable they are. For with Vitreous China comes a higher resistance to harsh treatment than ordinary ware. Much higher. Their beauty lasts; it is difficult to mar even by accident. And because "Standard" Sanitary Ware made of Vitreous China lasts and lasts, its cost for each year of service is much lower.

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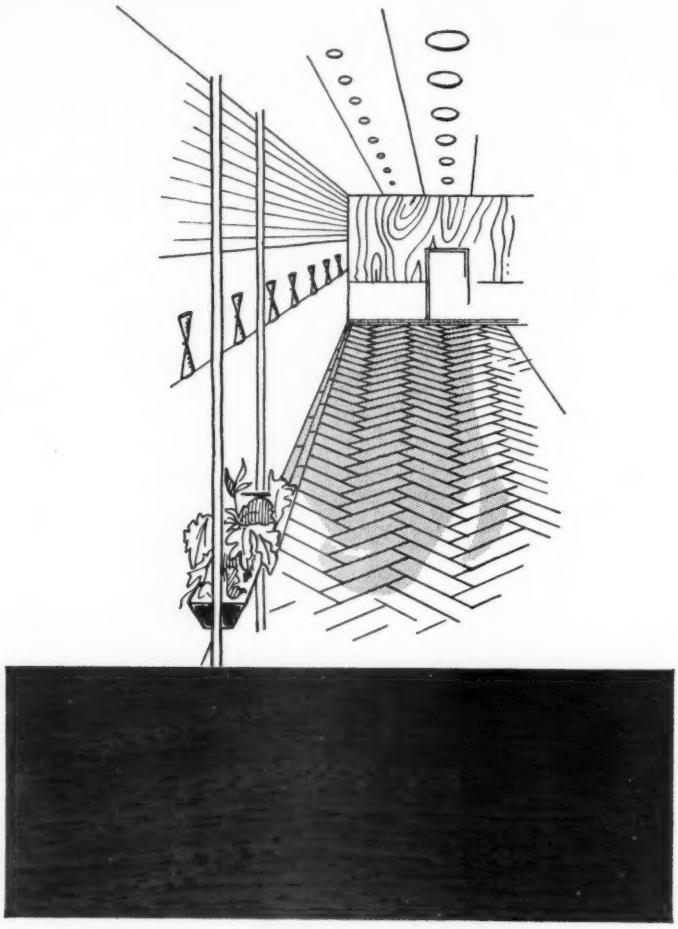

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Architect: Charles H. Pike, F.R.I.B.A.

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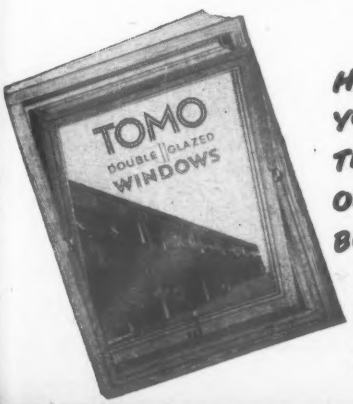

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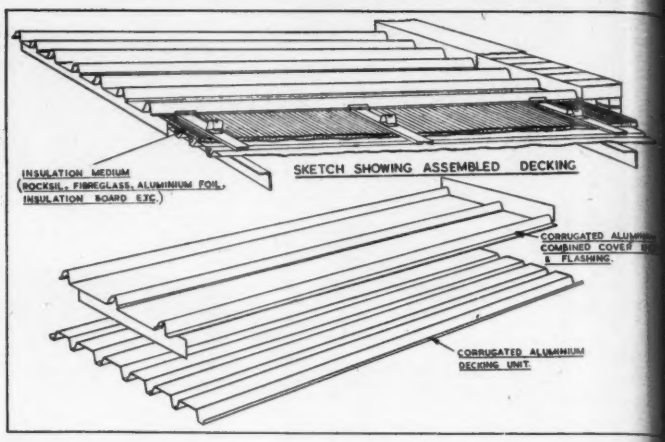

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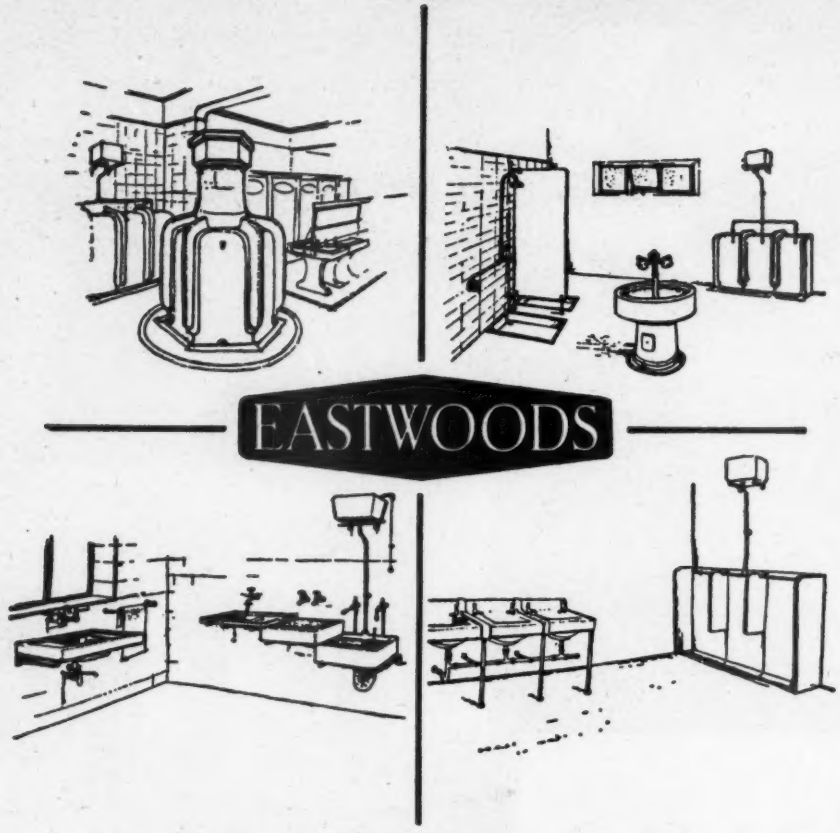

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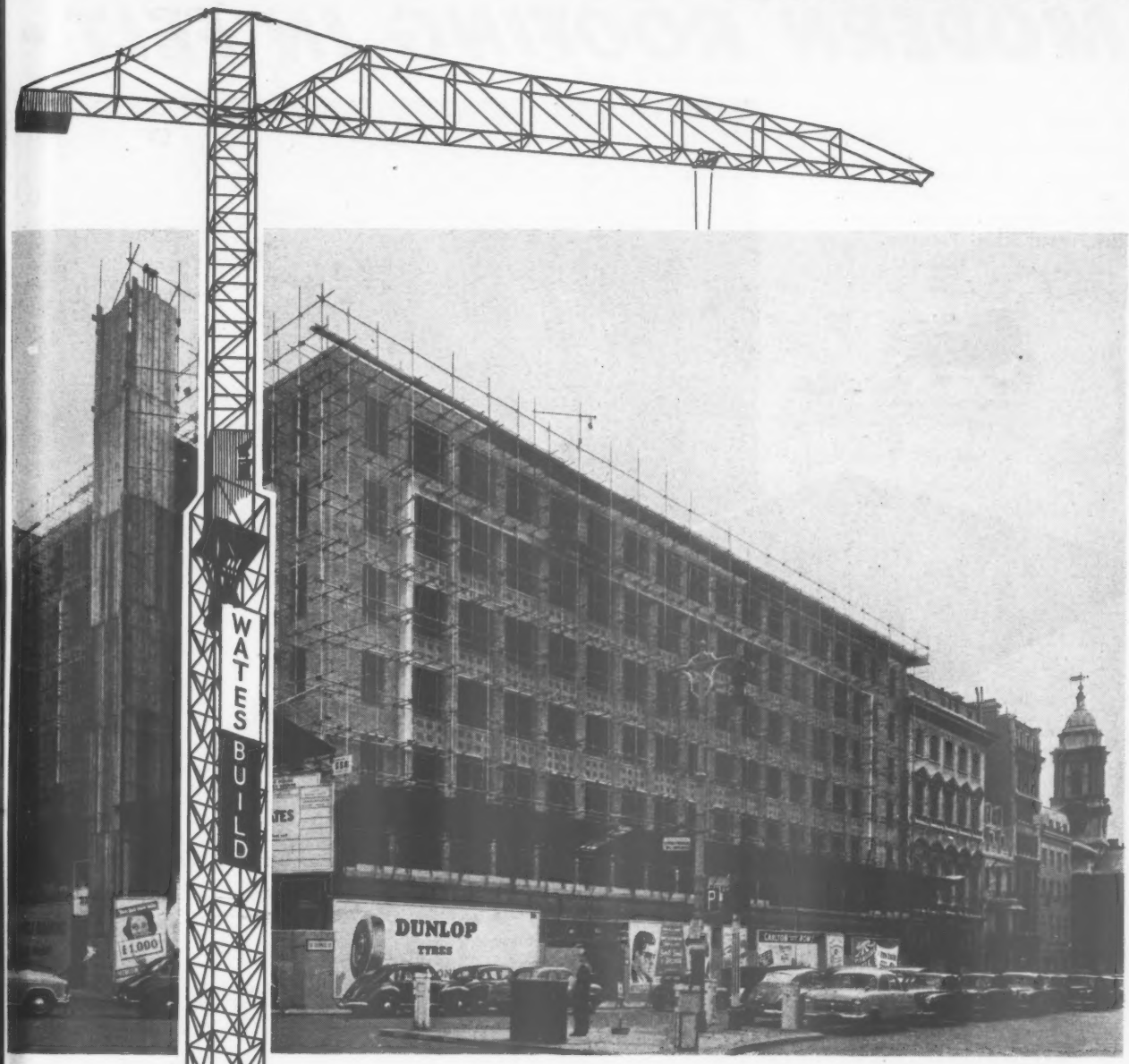

Vogue House, Hanover Square *Architects: Yates, Cook and Darbyshire.*

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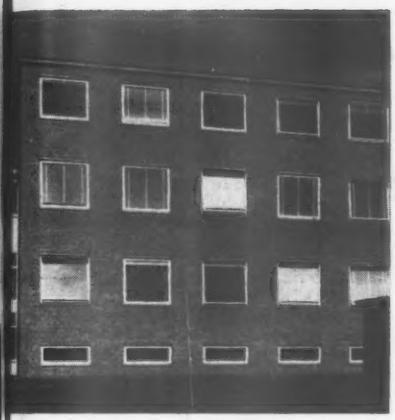

Full-view for FISONS

Chemicals for the improvement of health—both animal and vegetable—are the business of Fisons.
They have also ensured improved conditions in their new laboratories at Levington, Suffolk, illustrated in this issue (Architects: Johns, Slater & Haward) by an extensive use of full-view CARDA windows.
The double-glazed, pivoted sash of the CARDA window provides excellent sound and thermal insulation while a venetian blind between the panes eliminates glare and keeps rooms cool in warm weather.

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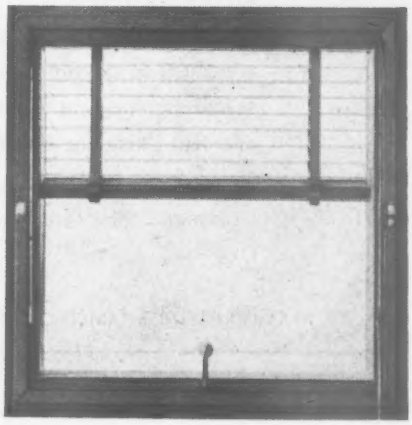

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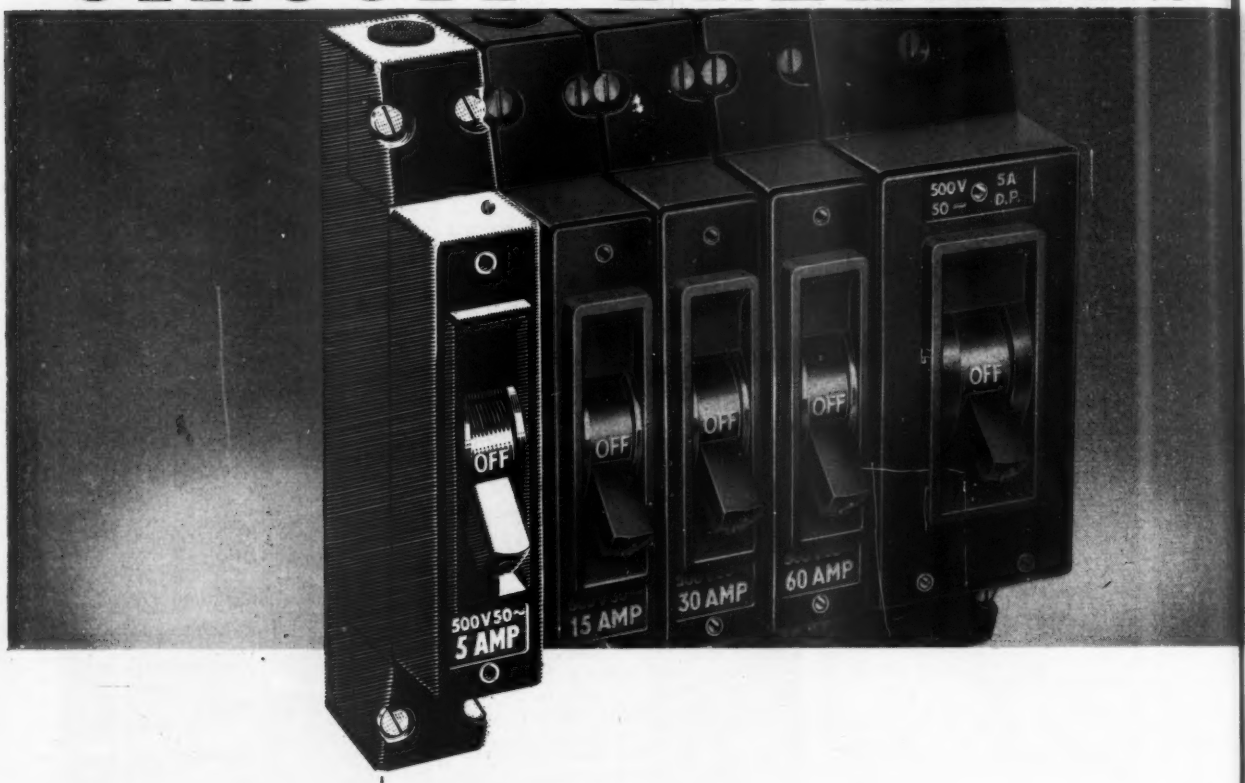

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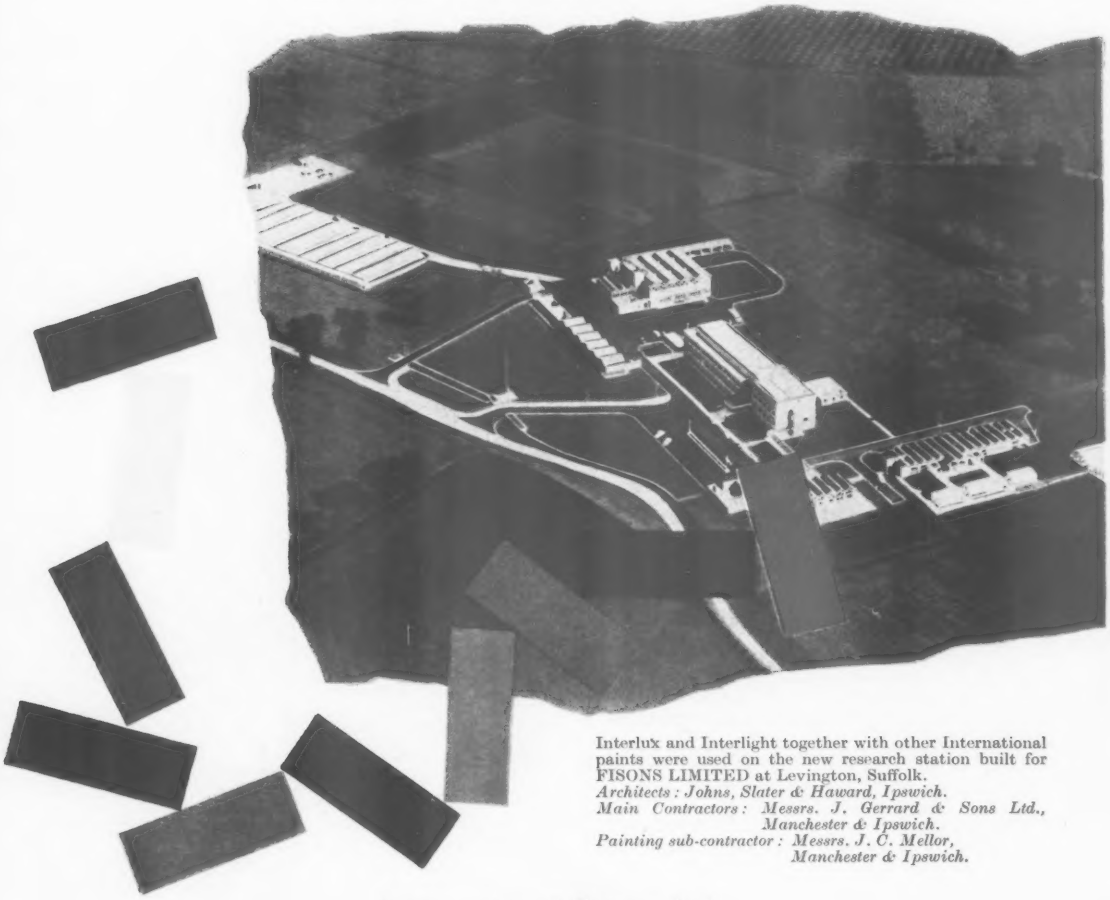

Interlux and Interlight together with other International paints were used on the new research station built for FISONS LIMITED at Levington, Suffolk.
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Main Contractors: Messrs. J. Gerrard & Sons Ltd., Manchester & Ipswich.
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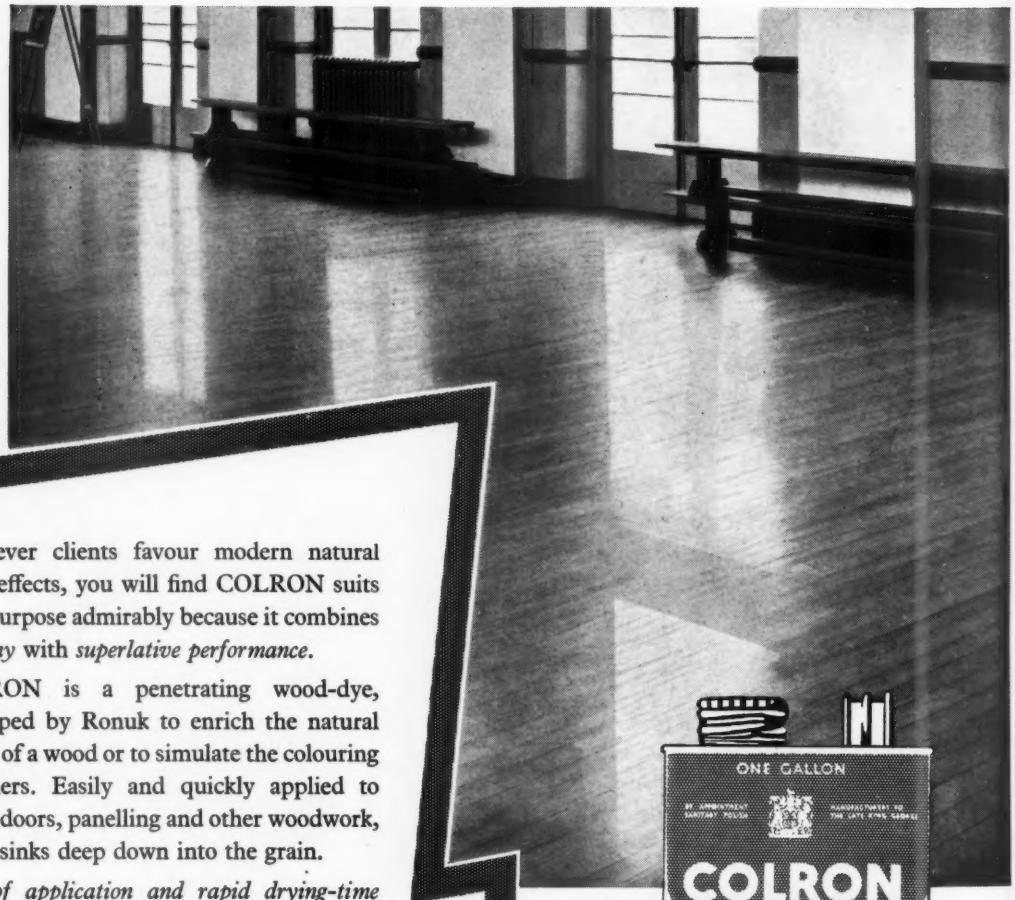

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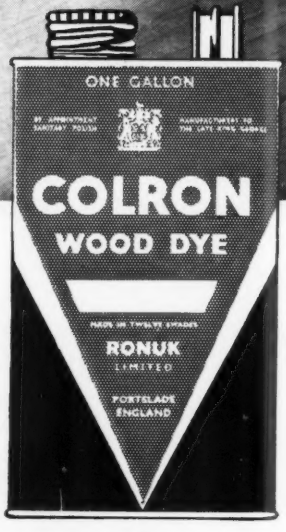

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THE ARCHITECTS' JOURNAL

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NOT QUITE ARCHITECTURE

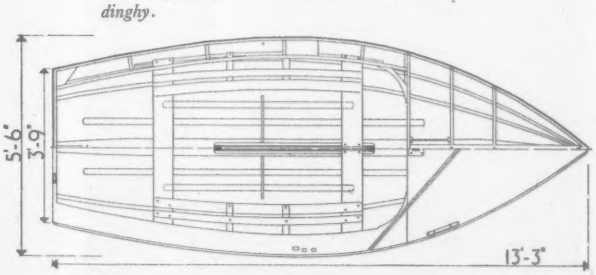
BUILDING A 14-ft. DINGHY: 2

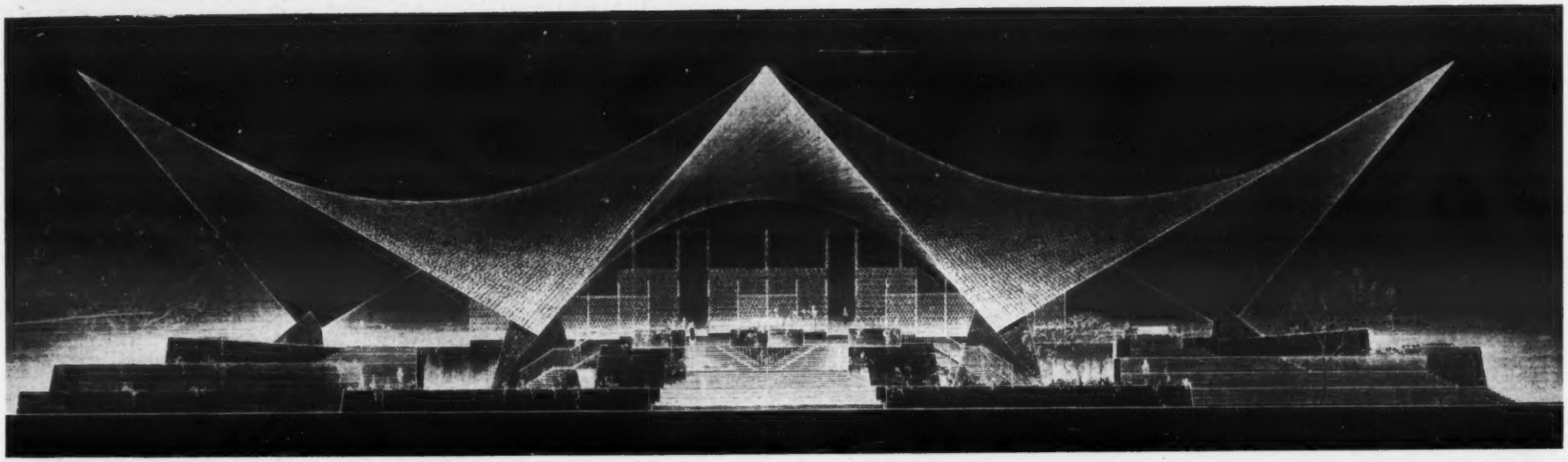
The boat was now a skeleton about to be covered with skin. It was still a very wobbly looking affair and not at all likely to inspire a potential helmsman with confidence. The next stage made a great difference in this respect, indeed even the bottom two sheets of marine ply when shaped (with boiling water) and glued in position, gave her a distinctly boatlike form, and when the whole hull was ply-covered and she was ready to turn over, confidence began to return. The combination of good, full-sized sections at frequent intervals across the hull, and a clear description in the specification with small illustrating sketches, made this part of the construction comparatively straightforward.

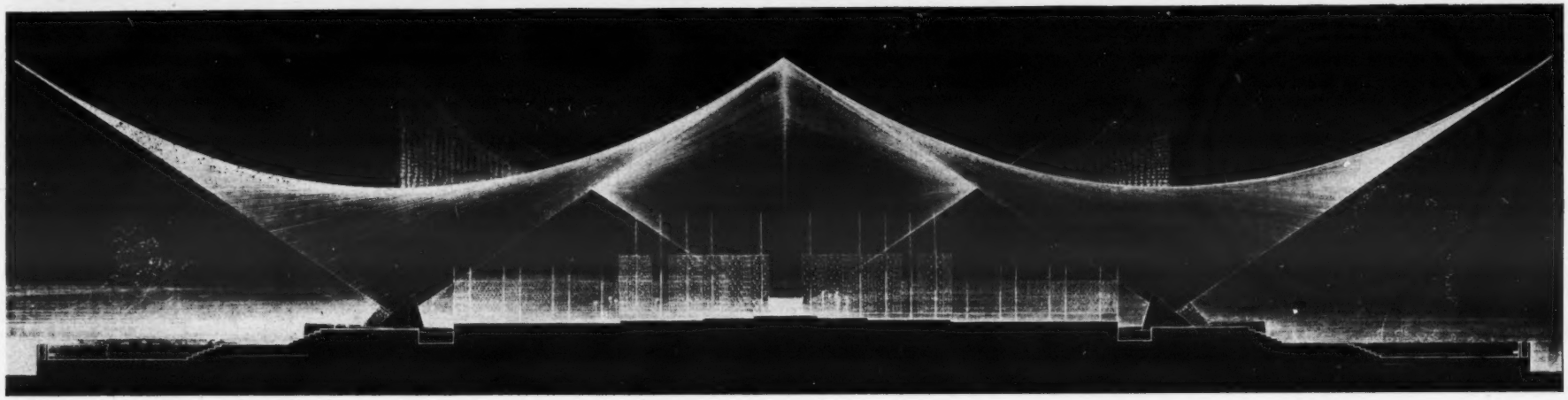
*

The mast of this particular dinghy is mounted on the deck and its load taken by a kingpost, down to the keel, and a kingplank and series of bearers which also support the foredecking. The construction of this, and the placing of the decking were the next stages. The centreboard and thwarts completed the basic structure of the hull. We were, I suppose, now about half

Below, plan of the News Chronicle *Enterprise dinghy.*







Jinnah's Tomb Competition: Winning Design by Raglan Squire and Partners

Raglan Squire and Partners (assistant designer Robert B. Roberts) have been awarded the first prize of Rs. 25,000 (approximately £1,850) in the international competition for the construction of the Quaide Azam Ali Jinnah Mausoleum in Karachi, Pakistan. The drawings show the main elevation, top, and a diagonal section, of the winning design in which a canopy composed of six concrete parabolic paraboloid forms laid out around a hexagonal plan covers Jinnah's tomb. Two second prizes of Rs. 7,500 each were awarded to Pierre Dufau and Paul Herbe, Paris. Three honourable mentions of Rs. 3,300 each were awarded to Andrault, Parat and de la Tour d'Auvergne, Paris, Naqvi and Siddiqui, Karachi, and Primakoff, Marett, Thariani and Akolkar, Karachi. Two other mentions (without prize) were awarded to Flurin and Andry, Bienne (Switzerland) and to Mr. Meeking, London. The jury was composed of The Prime Minister of Pakistan, Prof. Robert H. Matthew, Prof. P. L. Nervi, Gio Ponti, Prof. Eugene Beaudouin, France, and Mr. Georges Candilis, representing the IUA. The competition was not anonymous: all projects were signed and bore the names of the competitors. Further illustrations and a description of Raglan Squire and Partners' winning design appear on pages 346-347.

way through the operation in terms of time. It took about four months altogether.

*

The cleaning up and finishing of the hull took a surprisingly long time, and some concentration was required to decipher the drawings of the rudder assembly and the

Proof that it floats: The Lacey family go for a sail.

mast and boom shapes and fittings (the only wrong part we were sent, incidentally, was the brass bowplate which belonged to a boat of a different type and had to be sent back).

*

Sand papering, painting and varnishing are commonplace in any household and need no comment, but glueing, on which a hard chine dinghy depends for its existence, is perhaps of some interest. Reluctant to risk my life to a glued joint without some preliminary check on the makers' claims, I made a rough butt joint with two pieces of mahogany and tested it to destruction. I was delighted to find that the wood gave way before the resin bonded joint. This single fact struck me more forcibly than any other during my short boatbuilding career, and it is of course this fact that makes ply boatbuilding a possibility. Not yet fully exploited in furniture or building, it has fundamentally altered small boat design since the war.

*

The second thing that made a profound impression on me was the extraordinary strength that curved ply and light battens can acquire when glued together in a hull shape. This knowledge—commonplace to an engineer and known in theory by most architects, is forcibly brought home during this sort of operation.

*

The third and perhaps most vital point that struck me, as an architect, was the value to the operative of an absolutely clear set of drawings, leaving nothing to the imagination. I should be happy indeed if every set of drawings that left the office were as lucid and unambiguous as these!

JOHN LACEY

The Editors

THE PROBLEM OF COMPENSATION

THE House of Commons has given a second reading, although it seems unlikely to pass into law, Captain Corfield's Bill on compensation for the compulsory purchase of land. This Bill is primarily intended to remove an anomaly created in 1954, when the financial provisions of the 1947 Town and Country Planning Act were repealed. The 1947 Act was a cumbrous attempt to solve the problem known in planning jargon as compensation and betterment, by acquiring for the nation all development rights in land, and levying a charge on subsequent development. This was intended to ensure that land changed hands at its existing use value, the enhanced values resulting from public enterprise, planning or activity passing to the State. The 1954 Act repealed the development charge, so that the owner of, say, agricultural land can now sell it for such uses as housing or for industry at an inflated value, for the mere zoning of land for housing or industry immediately inflates its value: the public provision of roads and services inflates its value still more. To protect the public, however, land can still be acquired compulsorily at 1947 values. Inevitably, this has given rise to the growing anomaly of the parallel existence of two prices for land. Captain Corfield wishes to remove this anomaly by fixing the price of compulsory purchase at current market value.

This would remedy the injustice to some small proprietors at the cost of a much bigger injustice to taxpayers and ratepayers. Since compensation for planning restrictions on the use of land would also have to be paid at current market prices it would become very much more expensive to defend the development plan, and particularly such features as the green belts; and an additional financial obstacle would be placed in the path of redevelopment. Henry Brooke did right to resist the Corfield Bill: but matters clearly cannot be left as they are. Is it not possible to remedy both injustices: to give a fair price to the little man, and to recover for the community the enhanced land values created by public activity? A new Uthwatt might be asked to look at this problem afresh, and to consider, in particular, whether a partial solution in many areas would not be to speed up the public acquisition of land. If public authorities could buy today all the land required for public developments over at least the next 20 years, a host of anomalies for future years would be eliminated.

MIXTURE AS BEFORE

Jubilee year or not, the Ideal Home keeps to its usual formula, though this year it is the Fontainbleau staircase and the Parisian skyline with Notre Dame and all the others one would expect. Some of the Napoleon relics have never been seen in this country before, nor, according to the hand-out, have they ever been allowed out of France. This part of the exhibition is more than usually worth seeing. The general décor is less tiresome than usual and the houses are better, only Messrs. Berg remaining obstinately faithful to their monster, almost free-standing chimney of previous years.

*

The furnishings and fittings are again the same as usual though architects will be glad to see Dunn's of Bromley back again after too long an absence. In the furnished rooms Cecil Beaton's Edwardian bedroom was as amusingly civilized as one would expect; Mrs. Pattrick's beach house excellent, and the traditional Japanese kitchen astonishingly interesting. Robin Day's executive suite, on the other hand, would be mildly spoilt by its rather puzzled tycoon inhabitants who would, no doubt, scatter a few pillar ash-trays about. Don't miss either Dr. Ludowici's round house for a neat piece of extra tight planning which seems to need rather flexible tenants.

DR. NAIDE HITS THE NADIR

One thing the Ideal Home Exhibition does not show is how to plan homes for ideal televiewing. You will remember that last year the medical profession told us to get up and walk about during television shows, presumably to avoid being rooted to the spot with horror. And later we were told to take up viewing positions from a distance of ten times the width of the screen. That put some of us almost in the bedroom, which is just as well if our wives are going to heed the advice of Dr. Naide, of Philadelphia. "Girdles," he has just told a startled world, "and other tight garments should be removed before prolonged television viewing." If this sort of thing goes on it won't be long before we are taking our children to French ballet or Tennessee Williams to shield them from the facts of life.

MACHINE FOR LIVID

Incidentally, no one seems to have commented on the master touch in the London version of Tennessee Williams' *Cat On A Hot Tin Roof*. If you look at the programme notes you will see that the actors are smoking "Real American flavour cigarettes." On much the same principle the LCC has put real qualified architects into its new building on the South Bank, the extension to County Hall. But this gimmick won't fool anybody, least of all the Architect's Department itself. And if you think the architects are luckier than most people, because they can't see the sorry mess of the façade, then you certainly haven't seen the inside of the building.

*

Who is responsible for this shattering of part of the LCC's South Bank dream? Did somebody lose heart because the Shell building proposals had already swallowed the bulk of the site? ASTRAGAL has heard several stories. One is that the one-time Architect to the Council, Leslie Martin, wanted modern curtain-walled extensions that would fit in with the original South Bank plans, but was opposed by the Clerk (then Sir Howard Roberts). Another story has it that three schemes went up to committee—one modern building, one County Hall crib and one compromise. The compromise, stripped of all the flamboyant detail that gives County Hall much of its character, was accepted.

The exterior can be seen on the opposite page, but the interior has too many faults to be shown in one picture. The least inconvenient of these faults is the staircase balustrade—a triumph of pseudo-modern vulgarity. Other details are rather more upsetting to the architects who have to work in the building. Some of the seniors, for instance, arrived to find themselves installed in glass-walled offices, which they then surrounded with strips of paper to give themselves a little privacy. They found, too, that although the outer stone-faced wall is cantilevered from the columns, the space between the columns and the wall is too narrow to be usable. The telephones, of course, are all wired to the outside walls.

UNUSUAL OFFICES

Architects are probably more conscious than most people of the need for satisfactory office furniture. They are also aware of the immense amount of time and energy that is wasted by the competition system. So the profession may be interested to note that in the competition which the TDA is staging for the design of office furniture, a JOURNAL editor is one of the assessors. Presumably he has had the chance of putting forward some of the AJ's pet theories about the improvement of competitions. At any rate, there *are* two improvements in the way this competition is run, as you will have noticed if you read the announcement in last week's issue.

*

One improvement is the decision to invite entries in two stages, and thus to reduce the number of competitor-hours expended. Each entrant will be given a criticism of his sketch designs, and he can then decide for himself if it is worth going on with the second stage—the provision of drawings, specifications and prototypes.

*

The other improvement is the encouragement of collaboration between designers and manufacturers. Pleasant-looking designs so often fail to go into production because the designer has not been disciplined and inspired by working with a manufacturer. The TDA has hit on the right way of getting really useful results from this kind of competition, and it has anticipated criticism by planning to "marry" designers and manufacturers who are

not already working together. Just to make sure that no "impractical" designs are produced it has asked competitors to produce prototypes.

*

Congratulations to the TDA. It deserves a lot of entries.

BY NO MEANS ALL WRIGHT

ASTRAGAL was very disappointed by the exhibition of "100 Years of Architecture in America," which started life at the centennial celebrations of the AIA in Washington last year, and has now reached the RIBA, *via* Edinburgh, in an amended form. Judging by the beautifully produced glossy catalogue, the original exhibition, prepared by Frederick Gutheim, contained buildings that made the whole thing a somewhat private joke intended to fit in with the Elks and Buffalos atmosphere of an American convention. Nothing can convince me that two buildings by Frank Furness were worth including, when only one of Louis Sullivan's was used—and even that was the rather vulgar and pathetic Owatonna bank.

*

The organizers of the present exhibition have made a good attempt at improving it, by leaving out some of the historical stuff and putting in more recent buildings. But it is a pity that the first major exhibition of American architecture to be shown in this country since the war should be so poor.

ALL MOD. CONS.

Do our technical gimmicks (such as modular co-ordination, cost planning and nomination of contractors) ever leave the client better off? If you sometimes have doubts, you ought to have heard Dan Lacey's recent address to the Modular Society. Talking on "The Development of Standardized Components for a Local Authority Building Programme," he said that Nottingham had saved £33,000 on eight schools and that the local authorities involved in Donald Gibson's CLASP* scheme expected to save £350,000 on 31 schools. This, he said, was due to modular co-ordination. Not to be outdone in gallantry, Mark Hartland Thomas jumped to his feet and pointed out that modular co-ordination was only one link in a chain of design techniques. You must plan to use them all, he said, if you are really going to put your client in the money.

*Co-operative Local Authority School Programme

The extension to London's County Hall, from the South Bank. On the opposite page ASTRAGAL *asks how this "compromise" block came to be built.*

THE WAR OFFICE ADVANCES

The appointment of Donald Gibson to the new War Office job is encouraging proof that another of the ministries with a big building programme is now ready to learn this lesson. The War Office is to be congratulated on getting the best man for the job, and Donald Gibson is to be congratulated on bringing his talents into Whitehall. As Director-General of Works he will be the head, jointly with William Geraghty (a professional civil servant), of the new organization being set up in accordance with the recommendation of Lord Weeks' committee to carry out the Army's building programme. The set-up is similar to that which has been so successful at the Ministry of Education. He will be missed at Nottingham, but he has built a team that can carry on. It's now the turn of the Ministry of Works to have second thoughts about its retrograde step in appointing an administrator to take over from Sir Charles Mole.

AUTO IN LEX

What do you think Britain's road system is based on: facts and research or hunches and wishful thinking? ASTRAGAL has always suspected that the only policy employed is one of muddling through, and C. D. Buchanan's book on the motor-car in this country† confirms this. Mr. Buchanan questions whether anyone has yet realized that the mass-produced car has made the conventional street pattern obsolete. He says that while it is easy enough to provide express travel between cities (if you have enough money), it is not so easy to handle traffic in urban areas, where the problem is not only how to keep vehicles moving but how to save civilized town life.

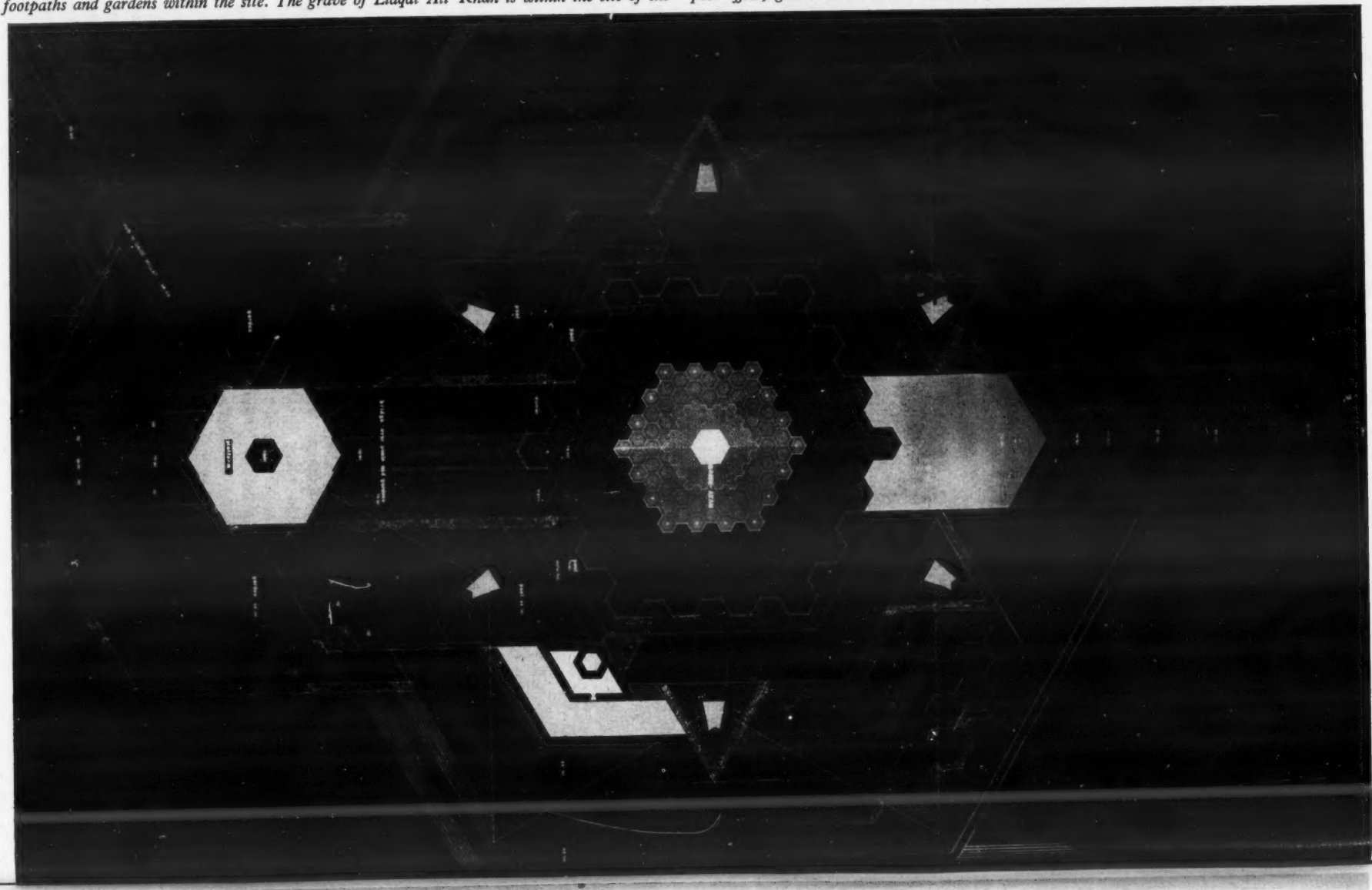
*

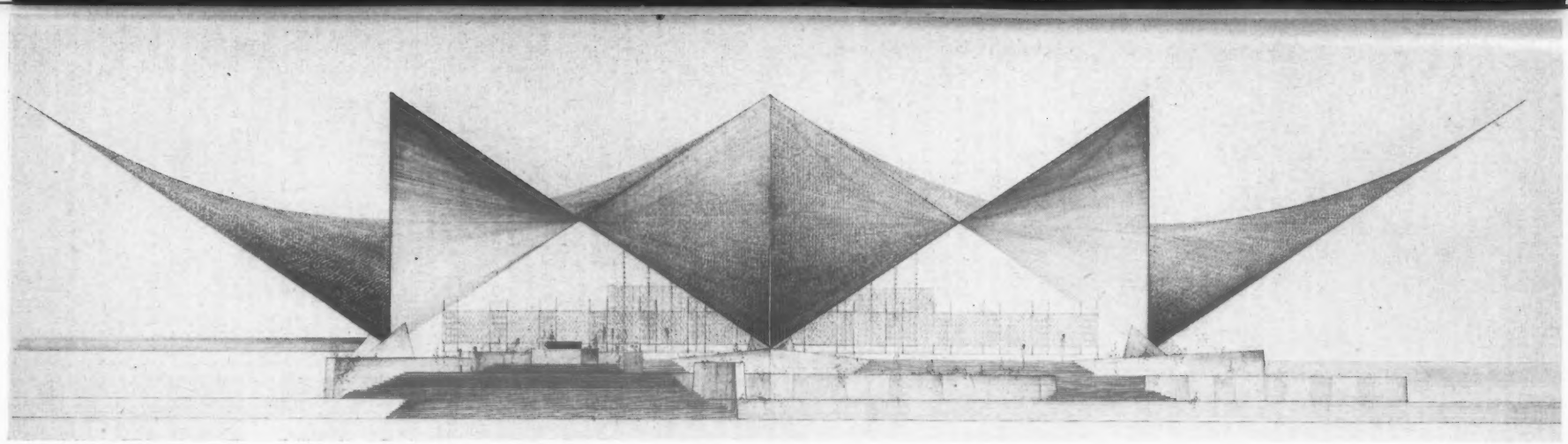
The author, who is an architect, an engineer and a planner, thinks it a good thing that we are unable at present to undertake major works of urban reconstruction, because we don't yet know what to do. His own solutions—and he admits that a lot more research is necessary—include the provision of two-level circulation in city centres and the exclusion of vehicles from certain areas. He is right when he says that a major weakness in our planning is the separation of road planning from town planning.

†*Mixed Blessing: The Motor in Britain.* (Leonard Hill Books, 30s.)

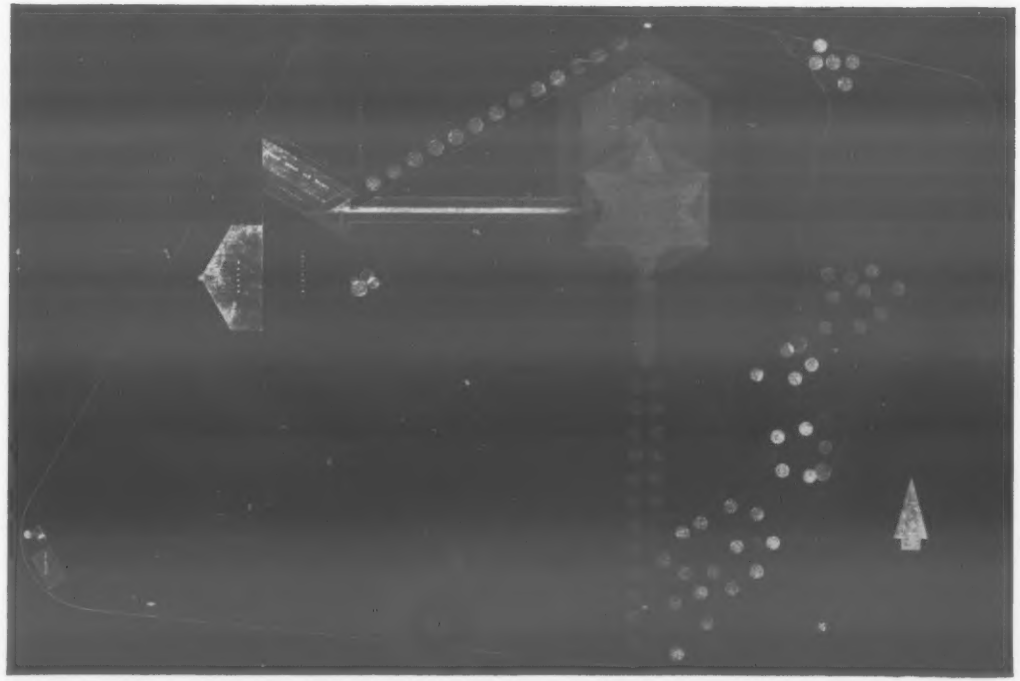
COMPETITION FOR JINNAH'S TOMB: WINNING DESIGN BY RAGLAN SQUIRE AND PARTNERS

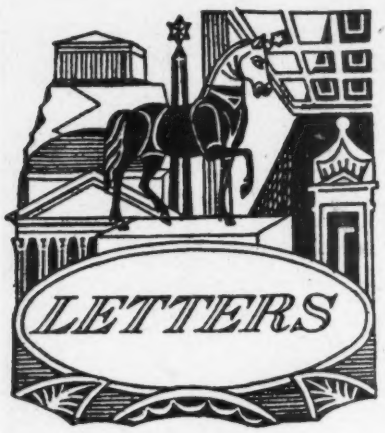
Competitors were invited to submit designs for the construction of a mausoleum of Mohammed Ali Jinnah on the site of the present sarcophagus, and to landscape and plan roads, parking areas, footpaths and gardens within the site. The grave of Liaqat Ali Khan is within the site of the mausoleum. Only the mausoleum and the gardens will be executed at the present time, but the design had also to site a mosque for 25,000 persons, a restaurant, shops, police station, a small post office, guard house and lavatories for both sexes. The drawings are a plan, below,





a site plan (right) and the east elevation (above). Raglan Squire and Partners have described their scheme as follows: The core of the plan is the sarcophagus which has a series of concentric hexagonal rings radiating from it in a descending series of levels. Thus the platform is cut back from its lowest level to form terraces and pools leading up to the climax of the inner rings. The inner rings consist of hexagonal marble slabs contained within coloured anodised aluminium grilles (an outer and inner ring), the whole being circumscribed by the topmost level pool. The six parabolic paraboloids are supported on large triangular shaped abutments, four of which are contained within high level pools, and two within low level pools; the latter pools receiving the falling water from the circumscribing topmost pools. Water has been arranged as an important element in this composition of levels, and is carried out from the centre to the Special Entrance to the south, where it is envisaged as a long approach trough from the new proposed road, and as a trough connecting the mausoleum to the new mosque, the western end of which contains the minaret. This Special Entrance is intended as a formal approach along stepping stones set in the ascending tank of water, ultimately rising by way of steps to the hexagonal platform. This platform gives on to a bridge which carries the visitor at high level into the screened core of the mausoleum. The main entrance is to the north up a series of stepped platforms. Construction of the parabolic paraboloid canopy is 2½ in. concrete, reinforced throughout by mesh and rods at the edges. External finish is gold mosaic tiles laid on a screed. Internal finish is shuttered concrete. The floor finish within the top circumscribing pool is of marble; outside the pool the finish is of stone. Terrace retaining and screen walls and outside facings to pool walls are of stone. Estimated cost is £427,000.





Michael Laird, A.R.I.B.A.

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Walter E. Cross, F.R.I.B.A.

Ian Nairn

S. H. Greenen, A.R.I.B.A., A.M.T.P.I.

RIBA Finances

SIR,—While it is always easier to criticize than to do the job oneself, the extraordinary circumstances of the RIBA finances and of the official explanatory statement demand investigation of things more fundamental. (One is hardly relieved to note at the end of each copy of the *RIBA Journal* that the RIBA "as a body, is not responsible for statements made . . . . in the *Journal*"). Yet there seem to be some anomalies which have not, at the time of writing, been publicly acknowledged:

1. If "the new review has taken account of changed conditions" and the Journal now shows a deficit of £3,700 on distribution costs, why has it not been suggested that receipt of the Journal is voluntary for each individual member? There are so many arriving by the same post in so many offices that this must surely be a luxury.

2. We can hardly reconcile that " . . . . the policy now approved by the Council provides, without any major diminution in the activities . . . . " when for public relations " . . . . the Council's previous approval of a grant of £10,000 per year for the period 1957 to 1959 be rescinded, and a ceiling figure of £1,500 for 1958 and £3,500 for each of the years 1959, 1960 and 1961, be approved . . . . "

3. Naturally, Mr. Jefferiss Matthews and his colleagues are "limited in the time they can give to the affairs of the RIBA" but it seems odd that they should consult with "financial experts whenever any financial problems arise" rather than have an expert eye constantly considering things whereby to prevent the problems arising at all.

I am at a disadvantage geographically, in this doric fastness of the north, *vis à vis* the situation but, particularly since a cut in the rebate to Allied Societies coincides with this increase in subscriptions, a provincial member is bound to be concerned over the structure of a representative organization which can be so full of unpleasant surprises. Having acknowledged the official catalogue of excuses, I think we should take off our wigs and be frank (for as ASTRAGAL remarks "you've got to have something in the bank").

Firstly, I doubt if the RIBA Council at its present size, and meeting so comparatively infrequently, can be much more than a rubber stamp. Surely those who have to sacrifice more of their time to take the policy-making decisions (presumably the Executive and/or the Honorary Officers?) should be directly elected representatives.

Secondly, if as much as 41 per cent. of the Institute's annual expenditure is on staff salaries, etc., then perhaps we should regard the organization of this department more critically; for it is evident from this latest statement that our Council is out of touch with current circumstances.

Finally, while we must appreciate the conscientious services of the Executive, one wonders how efficiently this set-up is set up when so many really crucial questions have to be referred to Richard Sheppard, Gordon Ricketts, and their *ad hoc* Committee—all of whom one must hope are quite indefatigable.

MICHAEL LAIRD.

Edinburgh.

SIR,—Many members of the profession must be deeply concerned by the recent RIBA statement of finances and consequent increase in subscriptions. I hope all those who feel as I do regarding this matter will take the trouble to write to the Institute and express their views constructively.

We cannot afford to be apathetic about matters of this kind and should resist with vigour this dictatorial policy. It is very difficult to justify an increase from 4 guineas to 7½ guineas in such a short space of time.

P. H. ROSE.

West Bridgeford.

The Good Old Days

SIR,—I am using this unfortunate "lull," affecting many private practices, turning out various old journals and documents to make room on my shelves. Among them I found copies of THE ARCHITECTS' JOURNAL and *Architectural Review*—treasures of the 1921-27 period—what delightful publications they were!

Photographic plates set centrally on the page or half-column, titles where they belonged and immediately related to their subjects, frontispiece and "contents" pages well set out and not mixed up with advertisements, and which in themselves stimulated the delightful interest to follow in turning the pages of easily-read print, the main articles in two columns only and the "notices" rarely occupying three columns, all pages with reasonable margins, in fact, each page a plate complete and satisfying with few, if any, advertisements mixed up with the "professional" text.

All plans and detailed drawings were easily read, photographs were prolific and the leading articles were expressed in courteous and gracious terms whether they were appreciations of an architect and his work or upon debatable subjects. Yes, they had a pleasant atmosphere of cultured and friendly intelligence—an invitation to linger and absorb. There were no "hieroglyphics," few graphs and charts, arrows and dots, neither did they promote a worried frown in trying to understand what it all meant. No impression is caused to wonder whether a catalogue has been picked up by mistake and it is not surprising that we kept them for future occasional enjoyment and reference.

They were not the "clever-scientific-looking" journals that are produced today but they had an academic character appropriate to the architectural atmosphere of the period and were almost "club" journals circulating among a large family of architects—they belonged to "us."

This is not intended to be a scathing criticism of the modern productions—perhaps a reminiscence; my younger partner still takes them but I gave them up upon return after the war because they worried me, but so did the licences and controls and the general mess and amazing eccentricities of the age, struggling for a "new" expression and which appeared to translate themselves even in journals' layout like the AJ and AR! However, I am now putting back those few copies of the 1921-27 period on my shelves, they are too precious to throw away!

I did wonder what the reaction would be if you could produce, say, one copy of the JOURNAL set-out in in the pre-war style, of course with the contents "vitalized" and of immediate news value—but I suppose the cost would be prohibitive?

WALTER E. CROSS.

Isleworth.

Chelmsford's Planner

SIR,—I'm sorry to have to pipe up two weeks running, but does ASTRAGAL have any idea of just what Chelmsford's area planning officer has to do? He is entirely responsible for the planning of the area of Essex between Chelmsford and the coast, going down to Southend—precisely the area where all the people balked by the Essex Green Belt are pitching in; and every application has to go through the Area Planning Officer. I think it is roughly comparable to the LCC post; one controls a lot of buildings, the other controls a lot of land. They may *both* be underpaid, but that is a different point altogether.

IAN NAIRN.

London.

Is The Scale Too High?

SIR,—The RIBA has recently circulated a letter to all local planning authorities expressing concern at the increasing number of planning applications made by persons outside the architectural profession. To quote from the records of one County Council planning authority, the proportion of detailed building plans received from unqualified persons in 1949 was 10 per cent. In 1953 the number had increased to 17 per cent and by 1957 had risen to 23 per cent.

The RIBA letter goes on to recommend that prospective developers be acquainted with the special scale of fees which architects are permitted to apply to the design of small dwellings, namely £45 for a ¼th. in. scale set of working drawings sufficient for Town Planning and Bye-law applications. Whenever possible, persons contemplating a new dwelling are strongly advised to commission a qualified architect, but it is not difficult to see why the service of architects is not sought when it seems to be possible to obtain an equivalent service elsewhere for half the cost, or even less.

The standard of design must inevitably suffer as the following figures show. In 1957, of plans received from architects 6 per cent were recommended for amendment, but of those received from unqualified persons 38 per cent called for some criticism and amendment. (Surely this is evidence enough in favour of architectural development control!) It is not democratic to prohibit applications from unqualified persons, and assuming that qualified architects are able to produce good designs, the only alternative is for the RIBA to reduce their scale of fees to a more reasonable figure, and in this way attract more work to the profession.

S. H. GREENEN.

Newbridge.

MIDDLESEX

'All-In' Service

Middlesex County Council decided last week, as an experiment, to commission Intercon Constructions Limited, an "all-in" design and building organisation, to erect "some necessary building of moderate size," as an experiment. The Education Committee has been asked to select a suitable project as Intercon in fact specialise in schools. The decision is the outcome of sharp controversy within the council; the Education Committee opposd the proposal in the first instance, and the County Architect, C. G. Stillman, has criticised the proposed arrangement on the ground that, while he would be the council's supervising architect, his powers of supervision would be severely limited. The decision of this council, one of the largest in the country, is a further reminder of the challenge to the profession that these all-in service firms represent. The difference between Intercon and the other all-in firms is that the latter are primarily builders, while Intercon are "middlemen" who subcontract their building operations.

Intercon claim astonishing reductions in the time taken to design and build. They can be ready to start on the site in less than two months from the date of client's instructions and can build a secondary school in less than twelve months. How do they do it?

The procedure briefly is this: Intercon has a consulting architect and a consulting quantity surveyor. They have prepared standard designs for planning units such as classroom bays and standard bills of quantities corresponding. When briefing particulars have been agreed with a client a design is worked out using these standard units to fit the specific site and requirements. The firm will then get quotations from subcontractors and suppliers for elements such as external walling, roof finishes, frame, etc. and place provisional orders for these materials.

At the same time they will negotiate with a general contractor to carry out the work under their direction, and agree a price for his part of the work. Intercon then submit a tender for the client's approval. They have been able to do this, on occasions, only two weeks after receiving instructions.

Intercon like to use the same sub-contractors and suppliers and where appropriate the same general contractors—who may collaborate in the design work. Intercon prepare a detailed programme of work on the site, based on a feed-back of information from previous jobs and they employ full-time agents to manage the contracts and act as "progress chasers." Thus in addition to ordering materials in advance they relieve the builder of much of his organising work.

Between Intercon and their client, the RIBA form of contract without quantities is used; between Intercon and their builder the RIBA form *with* quantities. The client pays a fee of £10 per child place, £2 10s. of which is included in the estimated cost of the school. The consulting architect and quantity surveyor are independent practitioners, not part of the Intercon organisation, but the firm employs full time draughtsmen (who are unqualified architects). The managing director is a solicitor who also runs a legal practice.

Intercon has been in existence since 1949, building primary schools and latterly secondary schools for five or six different authorities. They now propose to enter the field of factory building.

PUBLIC ENQUIRIES

Changed Procedure

Changes in procedure for inquiries into compulsory purchase orders, slum clearance orders and planning appeals are announced by the Minister of Housing and Local Government in a circular to local authorities. The changes are among those suggested by the Franks Committee on Administrative Tribunals and Enquiries, which reported last July.

The main changes are as follows: Local authorities proposing to buy land compulsorily are asked to let people affected have, as early as possible, a written statement explaining clearly why compulsory purchase is necessary. Authorities are also asked to supply in good time before an inquiry into a planning appeal a full statement of their reasons for refusing permission. Civil servants will attend inquiries to give evidence where a Government department has expressed positive views which form part of the local authority's case. They will be liable to cross-examination on questions of fact and expert opinion, but not on questions of Ministerial policy. The letter giving the Minister's reasoned decision will also state the Inspector's recommendation. Copies of the Inspector's report will be supplied on request to the local authorities and to the appellants or objectors.

These arrangements will apply to all inquiries held after February 27.

Typical schools built by Intercon Constructions Ltd. (See "Middlesex").

BRUSSELS

The British at Home

A correspondent writes: Between the United Kingdom and the British Industries' Pavilions at Brussels half an acre of ground has been handed over to a design group from the Royal College of Art, under the chairmanship of Sir Hugh Casson, as site for the development of the idea "the British at Home." The group includes Richard Guyatt, Professor of Graphic Art, architect Margaret Casson, designer Robert Goodden, and painter Leonard Rosoman, and has been assisted by John Brinkley as typographer. Large murals form the imaginative scaffolding upon which, by means of objects in showcases and "what the butler saw" inset panels, the impression will be built up.

These murals—Leonard Rosoman's "Outdoor Pursuits (48 feet long), Kenneth Rowntree's "The British at Home" (57 feet) and "Gardening" (15 feet), John Griffiths' "Music" (20 feet), on various panels of plaster and hardboard—are at present in process of being shipped and shunted to Brussels.

Rowntree's 57-foot wall will form three sides of a courtyard at the centre of the site abutting on the decorative covered way that links the pavilions. It shows a doctor's house in a cathedral city, a Welsh cottage, a young couple's London flat, and humble street in a manufacturing town, known as "high tea in Huddersfield." The curtain walling of a modern block of flats is so pictorial a conception that the artist's view of it hardly differs from the design drawings. But art can be very cussed, from the architect's point of view. Rowntree has made as much of the decorative possibilities of smoke from a row of horrid little chimneys as of Georgian rustications. The technical difficulties of presenting painted houses under living, three-dimensional trees are very great. Formalized trees usually associated with this artist's work are out of the question here. The Georgian house has been dismantled of its detail, which has been used to reduce the townscape pictorially to a single plane. The task is made no easier by the presence of square viewing panels in each section. Through them drawings of an appropriate interior can be seen; the high tea by Giles, the Welsh cottage by Edward Ardizzone, the doctor's house by Osbert Lancaster, the modern flat by Ronald Searle.

The Gardening mural shows, not a June border, but the glamorous paraphernalia of the craft, glass houses, new green dahlia sticks, and the coarse but indispensible row of sunflowers. At the back of this wall is an arrangement of transparencies showing buildings of merit produced in the last ten years.

Rosoman has a straight north-facing wall, for Outdoor Pursuits, into which are built the showcases and a tank where painted fish swim in an element of glass sheets. This phantasy is no particular drawback. The presence in the showcases of saddles, rods and guns presents a sharp challenge, in addition to that of the living trees, to his resources as a mural painter. Not only the landscape but the objects in his picture are face to face with reality. The answer has been to use violent, unnatural colours, the shooting scene in a curiously luminous monotone, the anglers in flowing red and orange. With this Neon palette and sophisticated line he succeeds in creating an authentically English landscape, damp and thorny. The multitude of hikers, cricketers, poachers, dogs and lovers is drawn with wit that stops short of caricature.

Next to this is an exhibit illustrating the theme "Nature in Design." This is done by means of a single flower, the Rose, which is shown as used in all branches of design in three different periods.

At the other end of the Garden Section is the " Music " mural of John Griffiths, who has also painted the outside of the small theatre. In order to cope with a symphony orchestra, the Huddersfield massed choir and jazz bands, in only 20 feet of wall, he has used a diagrammatical presentation. The surface is divided into vertical bands, light and dark backgrounds. Figures in appropriately contrasting tones are expressed in silhouette, their heads the notes in music. The grid is formed from staves. At right angles to this wall is a large photo-mural of the Royal Festival Hall.

BUILDING, 1957

Volume Unchanged

The value of building and civil engineering work carried out during the three months ended December 3, 1957 was £537 million, according to provisional figures compiled by the Ministry of Works. The figures are shown in the attached schedule, together with provisional index number of production for the same period, an index number of the cost of new building work and the employment figures for January, 1958. The value of work in the fourth quarter of the year was the same as in the third quarter: there was no change in building costs in this period so that the volume of work done was the same.

The value of work done during the year 1957 was £64 million higher than during 1956. The cost of new building work was on average about 3 per cent. higher than in 1956, so the volume of building work done in 1957 was only about the same as in 1956.

The provisional figure for employment in January, 1958, was 52,000 less than a year ago. Nearly 40,000 fewer men were employed on new housing work than in January, 1957.

JCC

Procedure Notes

The Joint Consultative Committee of Architects, Quantity Surveyors and Builders have issued the following Procedure Notes:

It has been brought to the notice of the Joint Consultative Committee of Architects, Quantity Surveyors and Builders that there is an increase in the practice of issuing bills of quantities in sections over a period after a date for submission of tenders has been fixed.

The Committee recommend that, save in exceptional circumstances, the whole of the bill should be issued to the tenderer before the date for the submission of tenders. In the very limited number of instances where this is impossible, adequate time should be allowed, after the issue of all relevant documents, for the contractor to give proper consideration to them before submitting his tender.

The Joint Consultative Committee of Architects, Quantity Surveyors and Builders are concerned at the large proportion of provisional sum items appearing in contracts. The Committee feel that an excessive number of these sums is often evidence of a failure adequately to plan in advance and they strongly recommend that such sums should be reduced to a minimum in the interests of more efficient, and therefore less expensive, building.

ISE

Mechanical Handling of Materials

A correspondent writes: At the lectures on the mechanical handling of materials given at the Structural Engineers Institute last week, S. F. Eden quickly read a report, which has been published by the *Structural Engineer*, describing briefly the advantages of new handling methods in the building industry. In his opinion the actual saving to be made on handling is of a very small order, perhaps 1 per cent.; but the main advantage lies in the speeding up of the contract as a whole, and in the reduction on indirect expenditure. He illustrated the talk with histograms showing how more expensive equipment and a larger gang of men can still reduce the price of a contract.

D. Bishop followed by showing three very interesting films on pre-fabricated concrete systems in France and Sweden. The first was the Camus system of complete wall panels which are cast in the factory and taken to the site where they are assembled, being lifted directly from the lorry to the position of the building. The quality of concrete is extremely rough and a lot of jointing and making good is necessary. The organization of the site is primitive in comparison with even normal procedures, let alone with the highly organized factory panel casting. The net result, however, is a flat which is up to the normal standard of French housing of equivalent costs.

The second system was the Coignet system, which is similar in principle to the Camus but differs through its use of extremely high precision panels. They are in fact so good that no packing is necessary in assemblage of most of the units. Again the site organization is primitive by normal standards and the net result is of a quality similar to that of the French housing of comparable cost. Both of these systems receive a Government subsidy. The third, the Sund system, does not. It differs from the two preceding in that all the casting is done on the site; and instead of metal forms, plywood and soft wood joist forms are used. The work is well organized and the whole is erected with a gantry crane. The panels are steamed, cured and stored on site before placing. Many services such as heating pipes and electrical fittings are incorporated in the panels, similar to the details of the Camus and Coignet systems. The final result is of a much higher quality than the French systems, reflecting in this the higher standard of Swedish housing as a whole.

BUILDING AND CIVIL ENGINEERING: OUTPUT AND EMPLOYMENT IN GREAT BRITAIN. 1, VALUE OF WORK DONE (at current prices)

Output of Building and Civil Engineering Contractors	1956	1957
	£ million	
A. New Housing		
For Public Authorities	325	306
For Private Developers	243	245
Housing total	568	551
B. Other New Work		
For Public Authorities	337	373
For Private Developers:		
Industrial	271	275
Miscellaneous	159	182
Other New Work, total	767	830
Total all New Work	1,335	1,381
C. Repair and Maintenance	399	405
Total Contractors' Output	1,734	1,786
D. Output of Labour Employed by Public Authorities	343	355
Grand Total	2,077	2,141

2, OPERATIVES EMPLOYED BY BUILDING AND CIVIL ENGINEERING CONTRACTORS: END OF MONTH IN THOUSANDS

					For Public Authorit es		*For Private Developers*		
	Total	*New housing*	*Other new work*	*All other work*	*New housing*	*Other new work*	*New housing*	*New industrial*	*New miscellaneous*
1957 January	1,061	311	428	322	186	179	125	146	103
1958 January	1,009	273	424	312	154	184	119	136	104

The index numbers of new building and civil engineering costs for the same periods are as follows: 1949 = 100

1956		1957			
4th Quarter	*Average*	*2nd Quarter*	*3rd Quarter*	*4th Quarter Provisional*	*Average Provisional*
136	136	139	141	141	140

Changes in the volume of work done are shown in the official Index of Industrial Production The number are as follows: 1948 = 100

1956		1957			
4th Quarter	*Average*	*2nd Quarter*	*3rd Quarter*	*4th Quarter Provisional*	*Average Provisional*
127	123	124	123	123	123

HATFIELD

Roofs Inquiry

The Minister of Housing and Local Government, Mr. Henry Brooke, has appointed Mr. Michael Rowe, Q.C. to hold a local inquiry into the causes of the damage to roofs of houses at Hatfield during a storm early on November 4, 1957. The inquiry will be held at the Cavendish Hall, Roe Green Centre, Bishops Rise, Hatfield, beginning on Tuesday, March 18, and will be open to the public.

DIARY

100 Years of American Architecture. Exhibition at the RIBA, 66, Portland Place, W.1. Monday to Friday, 10 a.m.—7 p.m.; Saturday 10 a.m.—5 p.m. Admission free. UNTIL MARCH 22

The Dispersal of Offices in Relation to Office Workers' Homes. Conference at the HC, 13, Suffolk Street, S.W.1. Speakers: R. Edmonds (chairman, LCC Town Planning Committee); I. J. O'Hea (Managing Director, Colt Ventilation Ltd.); Miss H. C. Hart, General Secretary, the National Association of Women Civil Servants. Fee: non-subscribers to the HC, one guinea; subscribing members, 10s. 6d. Tickets on application. 10.30 a.m.—5 p.m. MARCH 11

26 SERVICES AND EQUIPMENT
small electrical installations, 7
a small house installation in screwed conduit

Completing their description* of screwed conduit, Peter Jay and Clive Wooster apply the principles they have described to an imaginary installation in an actual house. This house (which is the same as that used previously to exemplify an installation in TRS) has been kindly "lent" for the purpose by the owner, G. A. Clark, and his architect, Kenneth Steel.

In the second and third articles of this series we described the electrical installation in the private house illustrated in Fig. 1, as it would be carried out using TRS cable. In this article we shall describe the installation as it would be carried out in screwed conduit. Here again, the discussion is confined to a house with a supply of alternating current (a.c.). The limitation is necessary because most of the switches and other components now in common use for housing will operate satisfactorily only on alternating current. If this is simply accepted as a fact for the time being it should lead to no confusion, and we shall deal with the distinction between alternating and direct current later on.

* Previous articles in this series appeared on July 25, August 8, 15 and 22, 1957, Feb. 13 and 28, 1958

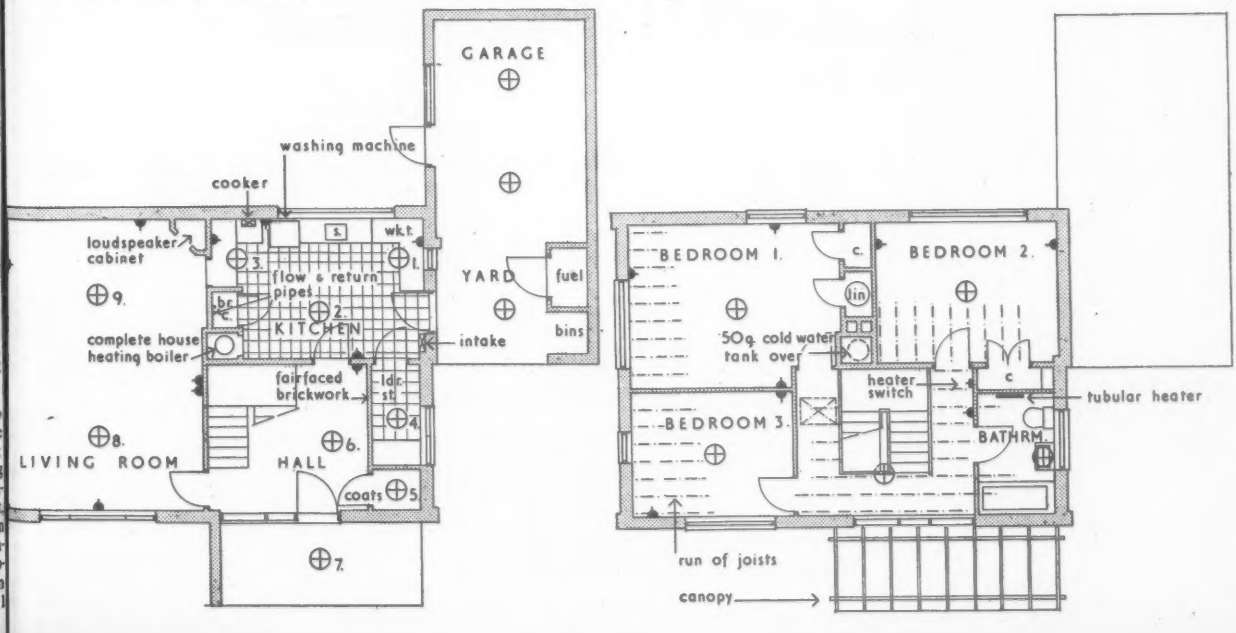
The intake

The *intake* is the central control position for the electrical installation, and is located at the termination of the incoming main. The following equipment should be located here:

1. The sealing chamber and fuses of the supply cable.
2. The meter(s).
3. The main switch and circuit fuses of the installation.
4. The bell transformer, and, frequently, the bell.

The problem of the location of the intake was dealt with quite fully in the second article of this series, for

Fig. 1, ground and first floor plans of the house at Taunton, scale $\frac{1}{16}$ in. to 1 ft.



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technical section

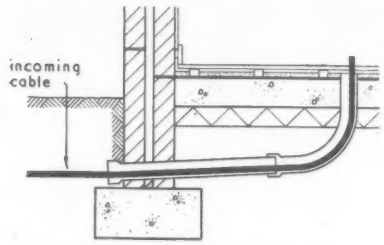

Fig. 2, duct for entry of service cable.

an installation in TRS cable. Very similar considerations apply to installations in conduit, but for easy reference, all the requirements for an intake position are given again in this article.

Whether the supply cable comes in underground or overhead, the intake should be so placed that this cable can be brought to it without undue difficulty. The intake must be accessible in order to read the meters and repair fuses, and it should not be placed in a cupboard likely to be filled with other things, for instance, under the stairs. However, there can be no objection to placing it at high level in a tall broom cupboard. It should be separated from the gas main and meter by a fire-resisting partition. It should be kept well away from any likely condensation, and must never be placed in a small or ill-ventilated kitchen. If it is placed in a large and well-ventilated kitchen it should be kept wall away from the cooker, especially from a gas cooker.

Where the supply authority require that the installation shall be earthed to the water main, it should be fairly easy to run the *earthing strip* from the intake to the water main.

There should be an easy and accessible route for the outgoing cables. For the installation in TRS the ground floor cloakroom was rejected as an intake position, since all outgoing cables would have to pass under the bath, and so be inaccessible. For an installation in conduit this objection is not so important, since the conduit can be laid out in such a way that no access boxes are placed under the bath and the cable can be drawn straight through. If there had been no other feasible position for the intake, we could, using conduit, have sited it in the cloakroom, but in fact we think that the position shown in the kitchen is the best both for conduit and TRS.

Without prejudice to the above conditions, which are essential, the intake should be as centrally placed on the ground floor as possible. In the case we have taken there is no available position at the centre of the house.

The Supply Authority should be consulted as soon as possible regarding the provision of a service, and if the latter runs underground, a duct, as shown in figure 2, will be required unless the intake is against an exterior wall.

The consumer's unit

Here again it is possible to use a *switchfuse control unit*, figure 3, which includes a main switch and circuit fuses, but requires a separate sealing chamber and meter panel. Alternatively, there is the EDA Unit, figure 4, in which the main switch, fuse panel, and sealing chamber are drawn from a standard range of parts. In this case the permission of the Supply Authority should first be obtained, and they will make a rebate in respect of the sealing chamber, which they would otherwise supply themselves.

In fact, a *consumer's supply control unit*, as shown in figure 5, will be used. This is a metal cabinet containing the main switch and fuses, with space for the sealing chamber, meter, bell transformer and bell. From the point of view of appearance and mechanical reliability the Consumer's Unit is to be preferred. It is slightly more expensive than the switchfuse control

Fig. 3 (above), switch fuse control unit.

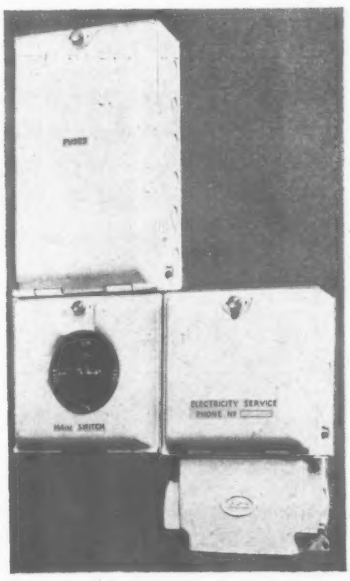

Fig. 4 (right), EDA unit.

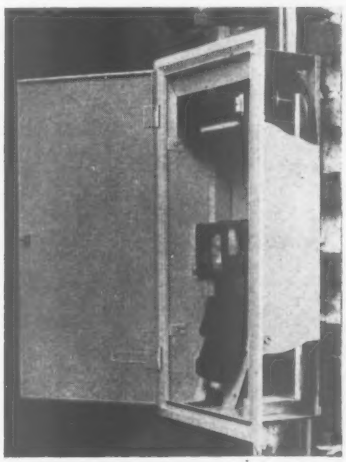

Fig. 5 (above), consumer's supply control unit.

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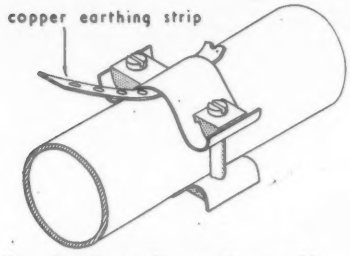


Fig. 6, clamp for securing earthing strip to water main.

unit but it is well worth it, especially for an installation in conduit. If, for one reason or another, it had been decided to use a switchfuse control unit, it is essential that a metal clad pattern with conduit entry holes be employed, otherwise the outgoing conduits cannot be fixed and earthed.

Fuses

Fuses were also discussed in detail in the second article of this series, and we shall only give a summary here.

The choice lies between rewirable fuses, cartridge fuses and miniature circuit breakers.

We recommend the use of rewirable fuses for use in private houses, except where the house lies very near the Supply Authority's substation. In this case it could happen that under certain rather rare fault conditions the rewirable fuse would fail to give adequate protection. Cartridge fuses should therefore be used instead.

Cartridge fuses are only a little more expensive than the rewirable kind, and there is no doubt that from the purely electrical point of view they are much more satisfactory. The only disadvantage is that householders rarely keep a stock of spare cartridges, and frequently fit ordinary fusewire into a fuse intended for use with a cartridge. This can be dangerous and we therefore think it better to use rewirable fuses where possible.

Miniature circuit breakers afford protection of the same order as that of rewirable fuses, but they are not as good in this respect as cartridge fuses. They are appreciably more expensive than fuses of either kind, and their chief advantage is in lowered maintenance costs. We do not think that it is worth installing them in houses built for the owner-occupier, and they find their chief application in Local Authority housing.

Number and rating of circuits

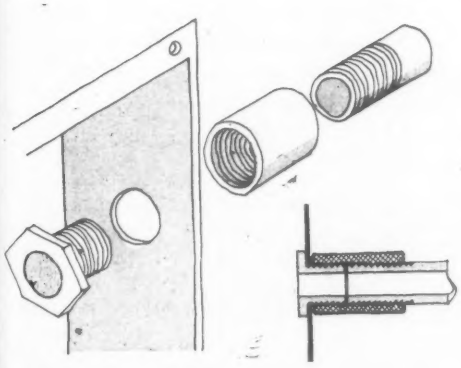
The house has fourteen lighting and nineteen ring points, plus an electric cooker, 3 kW. immersion heater and the garage and yard lighting. The floor area of the house is over 1,000 square feet so that two ring circuits will be necessary (this point was explained fully in the first article of the series). Two lighting circuits will also be necessary, ten points being the most that can be fed from one lighting fuse, while the cooker, immersion heater and garage should have their own fuseways. The fuseways are therefore as follows:

1. 5 amp. Ground floor lighting.
2. 5 amp. First floor lighting.
3. 30 amp. Ring A.
4. 30 amp. Ring B.
5. 30 amp. Cooker.
6. 15 amp. Water Heater.
7. 5 amp. Garage.

As explained for TRS, a spare fuseway is always a good idea, and especially so in this case, since a Consumer's Unit with an odd number of ways is only 2s. cheaper than the next size above. We shall therefore employ an 8-way unit, and the spare can be a 15 amp. fuseway.

Earthing the consumer's unit: This is effected exactly as described in the second article, by running copper strip with holes punched at close centres, called *earthing strip,* from the earth terminal on the unit to the sheath of the supply cable or water main, where it is clamped to the sheath or pipe by means of the clamp shown in Fig. 6.

Outgoing conduits from the consumer's unit: Several conduits will issue from the top of the consumer's unit, and it is most important that the connection of each should be made by means of a male brass bush and conduit coupler, as shown in Fig. 7. This is the preferred method for all conduit entries to sheet steel boxes, as was explained in the fifth article of this series, but it is especially important where several conduits enter from the same direction. This is because it is very difficult to arrange that all conduits are of the same length, to a tolerance of $\frac{1}{64}$ in., and if the alternative method, using a female bush and hexagonal



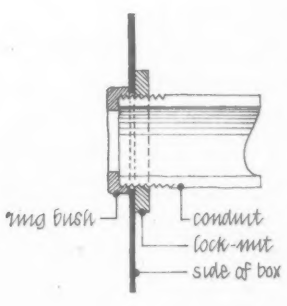


Fig. 7 (far left), method of connecting conduit to a sheet steel box.

Fig. 8 (left), alternative method of connecting conduit to sheet steel cabinet (not to be recommended).

technical section

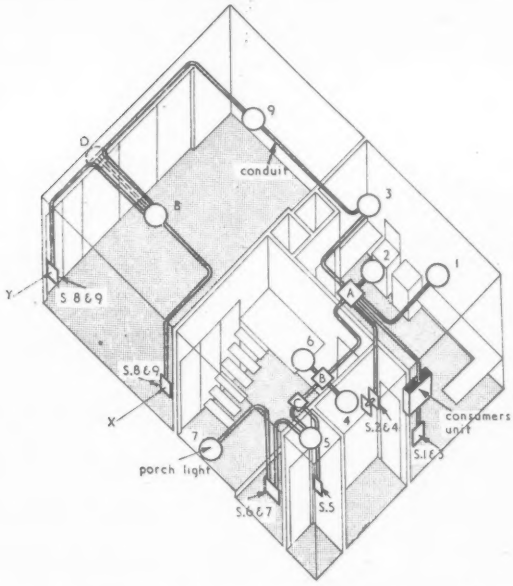
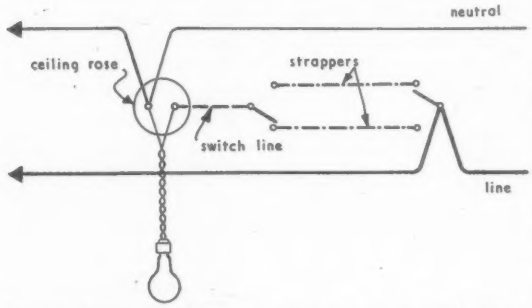


Fig. 9 (above), axonometric drawing showing conduit for ground floor lighting points. Fig. 10 (below), circuit for two-way switching applicable to conduit.



locknut, as shown in Fig. 8, should be employed, it is possible to loosen one locknut as the next is done up, and so on. If all nuts are carefully gone over after the first tightening, the joints will be secure, but the top of the metal cabinet may be strained.

If a male bush and conduit coupler are used it is possible to achieve really tight joints without risk of straining, but it is still necessary to give a final turn to all the bushes after they have first been tightened one by one.

Layout of conduit

Selection of conduit routing: The precautions necessary to avoid damage and corrosion, etc., were described very fully in the fifth article in this series, so that we shall describe the route selected for the ground floor lighting without listing these precautions again.

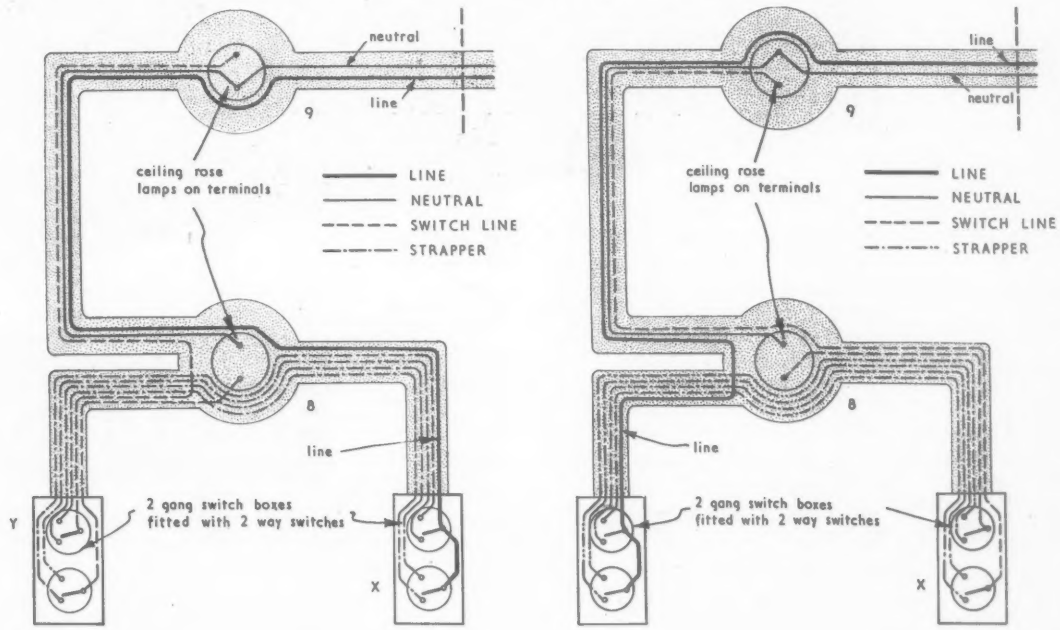
Ground floor lighting: The conduit to the ground floor lighting will run in the interfloor space, and should be so laid out that the minimum number of traps need be cut for access to boxes, without however, neglecting the requirements for good practice.

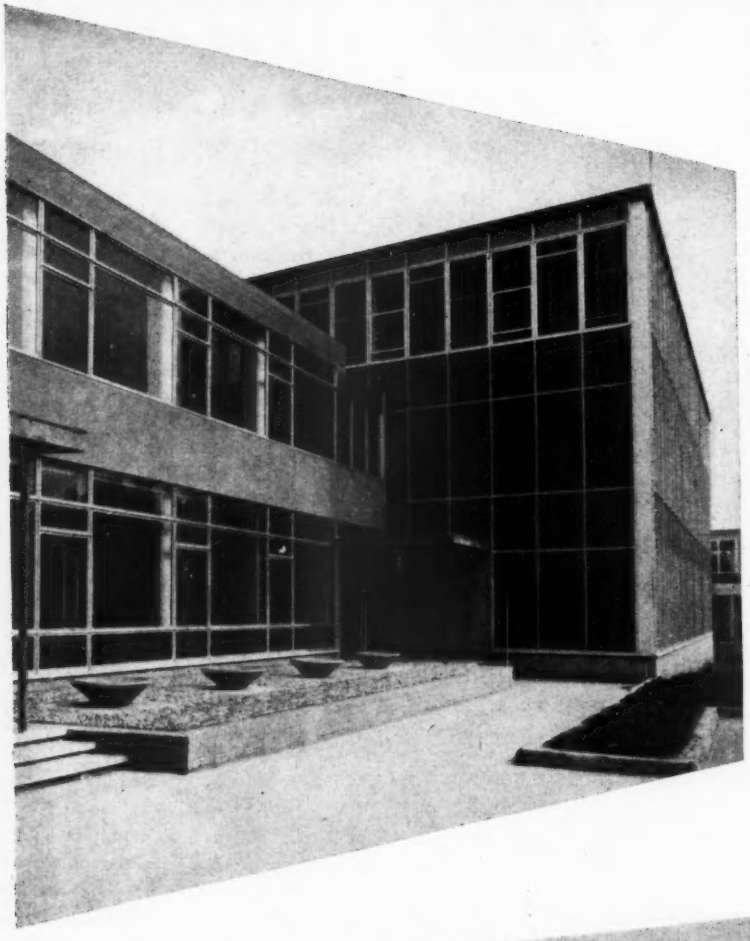
What seems to be the best layout is shown in Fig. 9, in the form of an axonometric. There are only three boxes over which traps need be cut, and these are marked A, B and C. The last two are only about 5 ft. apart, and could both be covered by one short board.

Box A is the junction between six conduits, and so an adaptable box must be used in place of a round one. Box B is the junction between four conduits, and can be either a round or a rectangular box, depending on the way in which the conduits are brought in.

It would be possible to insert a fourth box at the point D, and to adopt the layout shown dotted, but

Fig. 11, below, left and right alternative routing of cables to lighting in living room.





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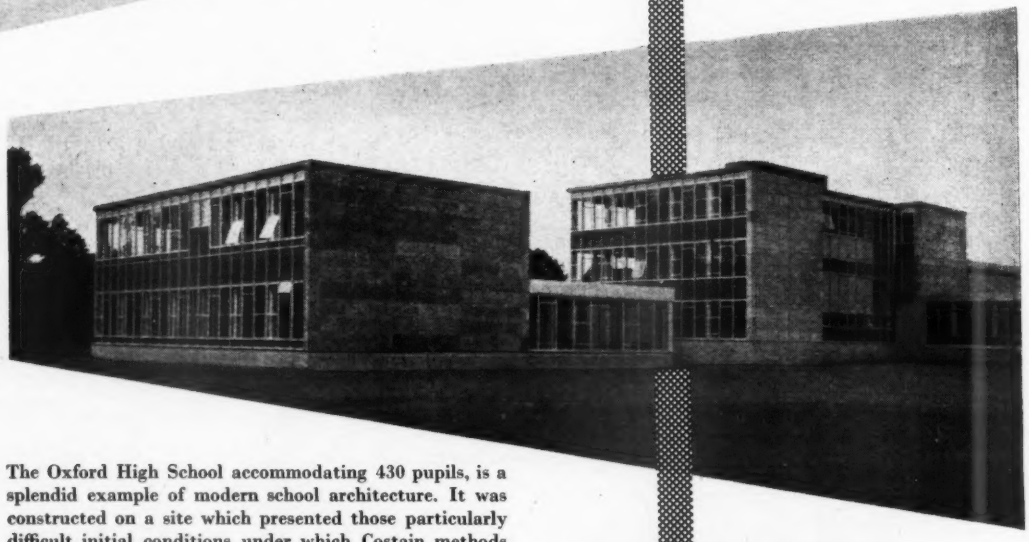

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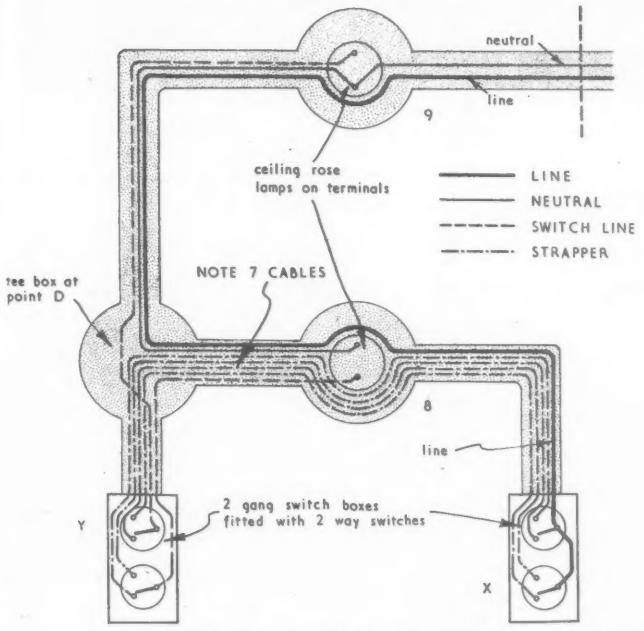

Fig. 12, cable routing in living room if additional conduit box is used.

there is a difficulty, explained later on, due to the large number of cables required in one section.

The reason for this large number of cables is the two-way switching of points 8 and 9, independently, from both doors.

Wiring to two-way switching: Referring again to the circuit for two-way switching given in the previous article, and here repeated in Fig. 10, it will be seen that a live feed must be brought to one side of one of the switches. As explained in the preceding article the red feed can be looped either from the ceiling rose, or from the switch, and where we have two switches mounted in one box it is necessary to bring in one feed cable only, and to loop it from one switch to the other. In this case we can bring this live feed either to the switches by the hall door, X, in Fig. 9, or to those by the outside door, Y. We must then take two cables from each switch over to the other switch position and from each switch in the second box we take the switchline on to the ceiling rose.

Fig. 11 shows a development of this method for the conduit routes in the living room. On the right is shown the result if the red feed is first taken to the box Y, and on the left, if it is taken to the box X. It will be seen that in no case do more than six cables pass through one conduit.

Fig 12 shows the result if a box is placed at the point D, as was indicated by dotted lines in Fig. 9. In this case seven cables have to be accommodated in the conduit running between D and the rose above point 8, so that either a 1-in. conduit would have to be used, or a double run of ¾-in conduit would be necessary.

This type of consideration is of fundamental importance in laying out conduit, and we shall here repeat the table giving the capacities of the smaller sizes of conduit for the two cables most frequently used in private house wiring.

CAPACITY OF HEAVY GAUGE CONDUIT

Size of cable	Size of conduit		
	⅝ in.	¾ in.	1 in.
3/·029	4	6	13
7/·029	3	4	9

Switchdrops: In the fifth article of the series the use of ⅝ in. conduit was discussed, and it was explained that its use is always inadvisable, although it is sometimes favoured for flush switchdrops since it can be accommodated in ¼ in. of plaster without chasing, whereas ¼ in. conduit always requires a chase.

The critical point in this case is whether, in the majority of cases, a conduit which will accommodate four 3/·029 cables will be large enough for a switchdrop or not.

We have already seen that four cables are not enough in the living room, so that ⅝ in. conduit cannot be used there. Fig. 13 shows the remainder of the cable routing, and it will be seen that in most other cases ⅝ in. conduit might be large enough for switchdrops only. Even so, we should be inclined to maintain the general principle, and to stick to ¾ in. throughout.

The use of lengths of ⅝ in. conduit in an installation in which ¾ in. conduit has generally been employed increases the electrical costs slightly, since adaptors and reducers have to be inserted when running ⅝ in. conduit from boxes designed for ¾ in., but it may be that where it is intended to apply ¼ in. of plaster to the walls, the avoidance of chasing with ⅝ in. conduit may offset this factor.

In a house of this kind, of course, ¾ in. of plaster is very rarely used, so that the walls will have to be chased anyway.

Conduit should never be reduced in size in the middle of a run, otherwise it will be impossible to draw the cables in properly. In all cases in which it is decided to use ⅝ in. conduit for switchdrops, conduit of this size should be taken right back to the box in the interfloor space.

First floor lighting: The conduit will here run in the roof void, and the route will not be dictated by the restrictions on notching joists.

The conduit carrying the feed to the void can rise vertically from the Consumer's Unit, and up the wall of bedroom 2. The point on the landing must be two-way switched from the top and bottom of the stairs, and the route for the conduit linking the two switches is shown in Fig. 14.

Ground floor ring circuits: In this case the wiring to the 13-amp. sockets will run in the screed, so that either galvanized conduit should be used, or black enamel conduit painted with two coats of red lead paint. Although the wiring must be in the form of a ring, the conduit need not be, since four 7/·029

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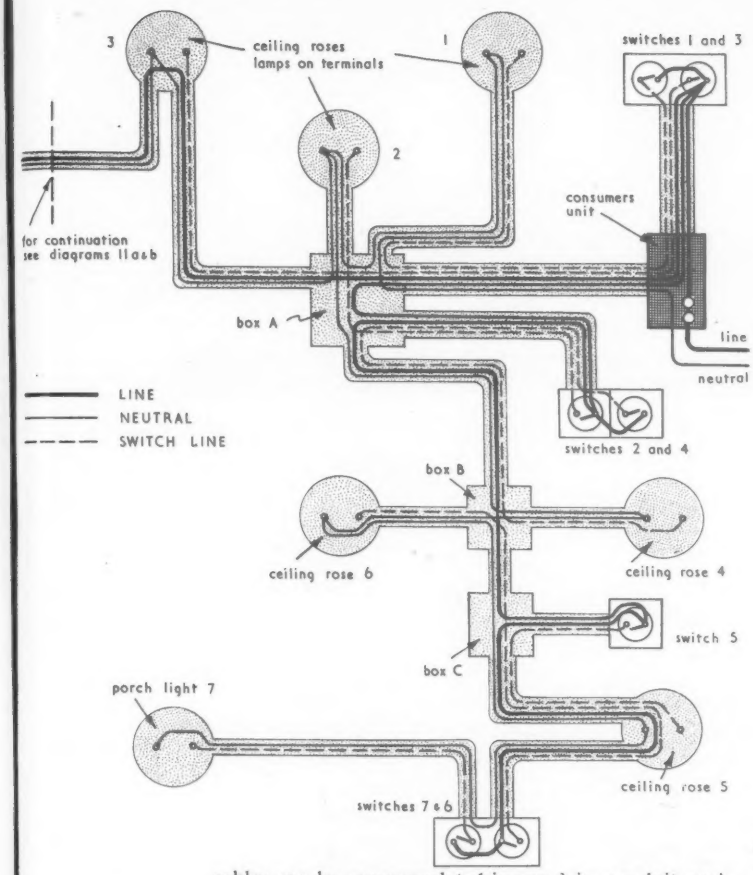


Fig. 13 (left), cable routing for ground floor lighting excluding the living room.

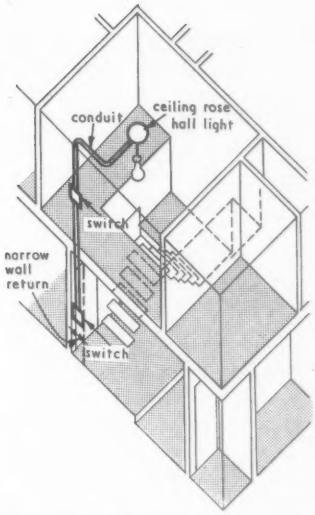
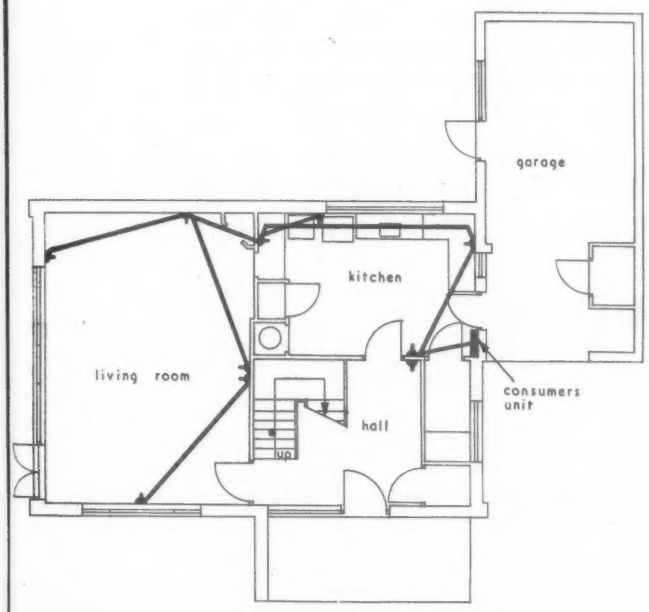


Fig. 14 (above), routing of conduit between the two switches for the landing light.

cables can be accommodated in one ¾ in. conduit, and the outgoing and incoming legs of the ring may be run in the same conduit.

The points to aim for in selecting the conduit route are minimum length of run between one access point and the next, and avoidance of the pipes of other services. What seems to us the best route is shown in Fig. 15. Three of the points in the kitchen are above work surface level, and boxes should be placed underneath, just above floor level, to facilitate drawing in cables. These boxes will be inside the cupboards, and the backs of the cupboards can be cut away for access. In all cases the conduit contains four cables and the sockets can be inserted in whichever leg of the wiring seems most convenient. The maximum length of conduit through which cable should be drawn is about 15 ft. In this case the points are not spaced further apart than this, and no intermediate boxes in the screed are necessary. Even where the spacing is greater than 15 ft., it is often better to add additional points so as to reduce the spacing, and avoid the use of floor boxes and traps. The cost of a socket is about the same as that of the trap, and whereas an extra point will probably have some use, the trap is merely a technical necessity, and serves no purpose to the householder at all.

Fig. 15, layout of conduit to the ground floor socket outlets.



The washing machine: The manner of connection of the washing machine was described, for TRS, in the third article. Exactly the same considerations apply using conduit, and the machine should be fed from a switched fused spur box, final connection being made by means of flexible rubber-covered cable running to a connector box set in the wall.

Spurs: The use of spurs may be examined for the ground floor ring circuit. It might appear tempting to spur some of the sockets in the living room and

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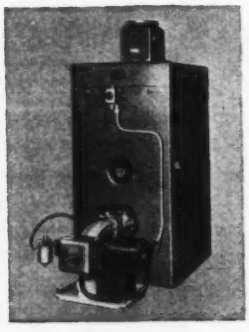

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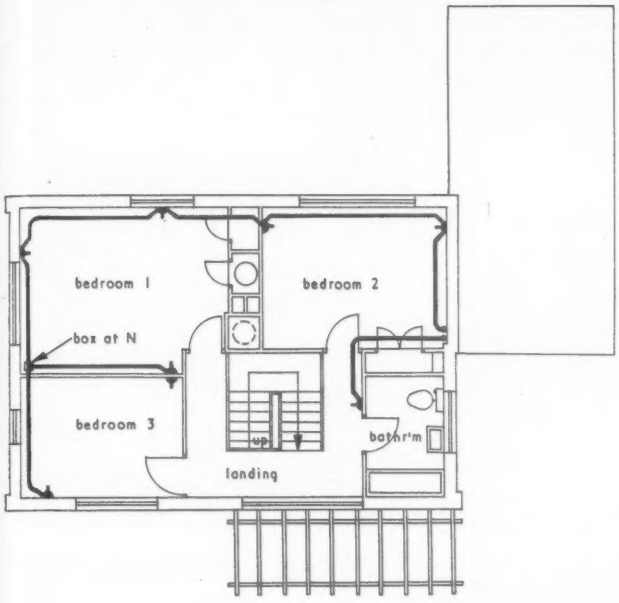


Fig. 16, routing of conduit to the first floor socket outlets.

kitchen from the main ring, but this would save cable only, and no conduit.

Single-core 7/·029 VIR cable costs about 7d. per yard. The total length of this cable saved by the use of spurs would be about 20 yards, costing less than 12s. 6d., so that here again spurs do not offer any significant saving to offset the technical disadvantages.

First floor ring sockets: The layout of conduit for these sockets is shown in Fig. 16. The conduit to the tubular heater and socket on the landing should be taken back independently to the Consumer's Unit, to avoid the use of a floor trap, but here again there is no particular advantage in using spurs. The cable should be taken out to the landing point, back to the Consumer's Unit, and then out again and round the rest of the ring.

A box at the point N in Fig. 16 will probably be the best thing here, although if there is some special reason for wishing to avoid a trap at this position two conduits can be taken out to the points on the dividing wall.

Bathroom tubular heater: The method of connecting this heater was described fully in the third article, and its adaptation to conduit technique should be quite clear from what has already been said. It should be noted that bonding of the conduit to the water pipes, using a 7/·036 earth wire is still necessary, although the pipes can be bonded to the nearest piece of conduit, and it is not necessary to take the bonding wire right back to the electrical appliance. The method of connection to the heater is shown in Fig. 17.

Separation of services: Comparison of Figs. 9 and 16 shows that the conduit to the ground floor lighting sometimes follows the same route as that to the first-floor sockets. It might at first sight seem economical to combine these routes, and to run a single 1-in. conduit in place of two parallel ¾-in. conduits.

However, the sharing of conduits between two different services is never advisable, as explained in the preceding article. It leads to confusion during wiring, and sometimes to danger when carrying out repairs and alterations later. Apart from this, it is an expensive matter to keep changing conduit sizes, owing to the necessity of using adaptors, and it is likely to be economical, particularly in a small installation, to keep to ¾-in. conduit throughout, as it is so very much easier to handle.

Installation of the cooker: There is very little to add to the description given in the third article of the series. Two 7/·044 cables can be accommodated in a ¾-in. conduit, and this conduit should be run from the consumer's unit up into the inter-floor space, over and down the wall to the cooker control unit, passing through a box somewhere under the floor of bedroom 2.

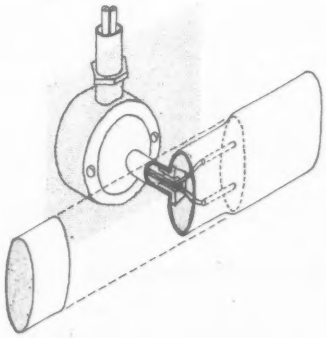
The final connection to the cooker should be by means of flexible metallic conduit soldered to a brass gland at either end, as shown in Fig. 18. It should be noted that a separate terminal to earth the box will not be needed, since the earthing is completed by the conduit, but an earth wire should be run inside the flexible conduit and be brought out through a hole drilled in the gland at either end, where it is soldered to the exterior.

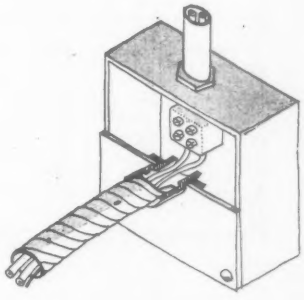
The bonding of the cooker control unit to the water pipes using 7/·036 wire, or earthing strip, should be carried out here as for TRS.

The wiring for the immersion heater, for the garage and for bells and telephone is the same as for the TRS installation.

Fig. 17 (right), method of connection to bathroom tubular heater.

Fig. 18 (far right), method of connection to cooker.





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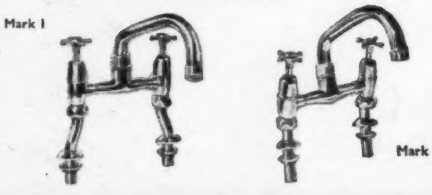

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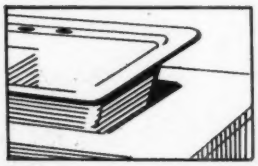

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CRITICISM

by J. M. Richards

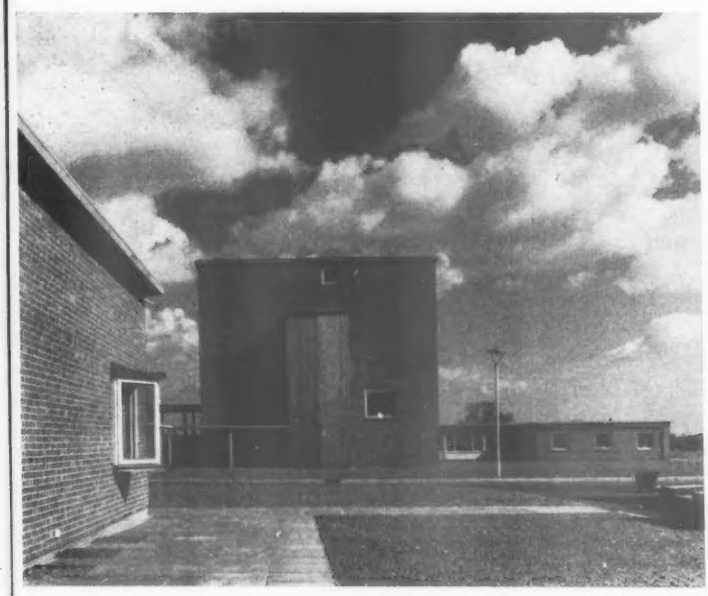
RESEARCH STATION near IPSWICH
designed by JOHNS, SLATER and HAWARD

This is a good example of a building (or, rather, a group of buildings) planned round its services and answering the demands of a fixed sequence of operations. It shows how useful the architect can be to the industrialist even if he is simply regarded as a man capable of translating a number of scientific or industrial activities into a number of enclosed spaces in such a logical and coherent way that he contributes to the economy and efficiency of whatever process is involved. In this case the architect has also been able to give the buildings a satisfying enough form and character to make a contribution to good working conditions in a more general sense too.

The close relationship between planning and services in each building is obvious at a glance (see plans on pages 361-374). The relationship between the layout of the group of buildings and the sequence of operations they are designed for is less clear, because other considerations have intervened, notably the need to allow for future expansion.

Apart from a free-standing canteen block linked by a covered way to the main building, for the use of all those (about 150 in number) working at the research centre, there are three separate buildings: a laboratory block, with laboratories for chemistry, soil-analysis, etc.—the owners are Fisons, manufacturers of fertilizers—with offices at one end; a "pot-trials" building where testing is carried out by growing large numbers of samples in pots, in conjunction with work in glasshouses sited nearby, and a process laboratory where pilot manufacturing processes are carried out (no manufacture of fertilizer for sale takes place on this site). Combined with the process laboratory is a power house serving the whole project.

Solids and voids disposed functionally but with rigorous geometrical effect: the east end of the office wing with timber-clad staircase; on the left the canteen, linked to the office and laboratory block by a covered way.



The four buildings are not placed in any obvious functional relationship, but are sited so that each of the three operational buildings is capable of extension by adding further units of the same kind in a southerly direction—that is, away from the road—the land here being farmland owned by Fisons. This has meant giving an orientation to the centre block which is probably not ideal. One range of laboratories faces nearly due south and the other nearly due north.

All the buildings, nevertheless, are satisfactorily tied together visually by well thought-out landscaping and well placed ancillary structures like garages and cycle sheds and the screen wall that encloses the service yard of the canteen block; also by an open timber screen—a most valuable item this—separating the forecourt of the centre (laboratory) block from the car-park that occupies the space between it and the process laboratory. The landscaping is well finished and well cared for. In this respect a manufacturer of fertilizer makes the best possible client, because he cannot afford not to have all the lawns and planting looking in perfect condition.

Underground tunnels in which heating pipes run connect all the buildings to the power-house, and inside each building there is similar provision for services in the shape of vertical and horizontal ducts on a lavish scale. In fact, in this block the amount of space given up to services is astonishing. Presumably the clients and their technicians know what they are about and I do not presume to say that so much space is not required, but I don't think I have ever seen a building before in which the proportion of floor area occupied in this way was so great.

The whole of the top floor, above the laboratories (but smaller than them in area, since the side walls are set back), is taken up by the ventilation plant and its ducting (the laboratory block only is air-conditioned), and then on each laboratory floor the centre corridor is lined on either side with continuous ducts, accessible through ordinary cupboard doors, which are divided systematically into compartments each containing an identical arrangement of vertical services, which can be tapped as required from the laboratories. Double floors also provide horizontal duct space, and all this is in addition to large plant-rooms in the basement.

The planning is very simple and straightforward and calls for no comment. The laboratory block has a well managed semi-basement, with laboratories along one side, adequately lit because the ground outside has been excavated at an angle to allow room for windows as large as those above, and store-rooms with small clerestory windows along the other side. A nicely proportioned entrance hall, with a large high window above the staircase, serves both laboratories and offices. It is entered beneath a canopy, the flat roof of which, incidentally, does not seem to have been

Folded slab roof with horizontal tie: upper part of power-house.

designed with a fall. There was an alarming amount of water lying on it when I was there, just after a sharp shower. In the upper part of the office wing (where the only fault I can find is an under-lit central corridor) is a top-lit, galleried library (picture on page 366), a room of very pleasant character of the kind more usually associated with a university than with an industrial building.

In fact all the detailing, though simple and appropriately robust, is of a good standard, helped by exceptionally good quality materials (for example, phosphor-bronze for the staircase balustrade and Derbydene marble for paving the corridors, stairs and entrance hall). In the entrance hall is the one attempt at applied art in the scheme, unfortunately, in my view, not very successful; which is a pity because it is an admirable thing that artists should be used by industrial or scientific bodies in this way. A brick side wall, rising through two storeys, was a good place for decoration, and sgraffito (coloured plaster, carved and scratched to reveal successive layers) was a good medium for decoration on a brick surface, but John Hutton's series of symbolic female figures (see picture on page 363) are too insensitively drawn to give any pleasure on their own account, yet too naturalistic in style to provide a decorative pattern related to its architectural setting.

Improved version with tie eliminated: west facade of canteen.

All the buildings in this scheme are of concrete frame construction with cavity brick panel walls—a Shropshire brick of quite a pleasant orange-brown colour. In the laboratory block, where the frame is not exposed, the large windows, which occupy almost the full width of each structural bay, effectively maintain the rhythm set by the modular planning. The window treatment generally—large, square openings containing pivot-hung timber sashes, detailed with the minimum fuss—is, I think, very successful.

What I find particularly interesting about the exteriors, however, is the roof treatment. The architect has used folded slab roofs on every building except the centre one, though each roof differs in detail and their ridge-lines run sometimes north-south, sometimes east-west. This type of roof is no doubt fully justified functionally, but it also serves the very useful purpose of providing an element common to all the variously proportioned building and thus in unifying the whole scheme. In addition, to my mind, it helps the group of buildings to fit well into the Suffolk landscape, perhaps because its triangular shapes echo the gables and roof-peaks of traditional farm buildings.

In connection with these folded-slab roofs, there is one interesting difference to be noted between the canteen building (the last of the buildings to be designed) and the others. The others have a horizontal concrete member across the base of the gable, which largely blurs the geometrical clarity of this form of construction. It functions as a tie, which the engineer (F. J. Samuely) declared to be necessary. When dealing with the canteen building, however, he evolved, at the instigation of the architect, a different design using a Y-shaped member (see interior view, page 372) which eliminated the horizontal tie, greatly to the benefit of the design. The gain is equally noticeable whether the glazing occupies the whole wall, as on the east side (see picture on page 372), continuing into the gable, or whether it takes the form of an aperture in the gable only (picture on left). In the latter, incidentally, it may be noticed that the architect has added to the smoothness of the effect by the thoughtful device of draining the valleys between the folded roofs in alternate directions, so that on each façade down pipes are required only to alternate bays.

One final point in these buildings' favour. Note how skilfully the water-tanks, etc., have been incorporated within the envelope, as it were, of each building, so there are no excrescences on the skyline—especially important in a rural setting. The process laboratory-boiler-house is the only building which has a prominent water-tank and here it is not an afterthought but an essential part of the composition.

building illustrated

Research station at Levington, near Ipswich, Suffolk

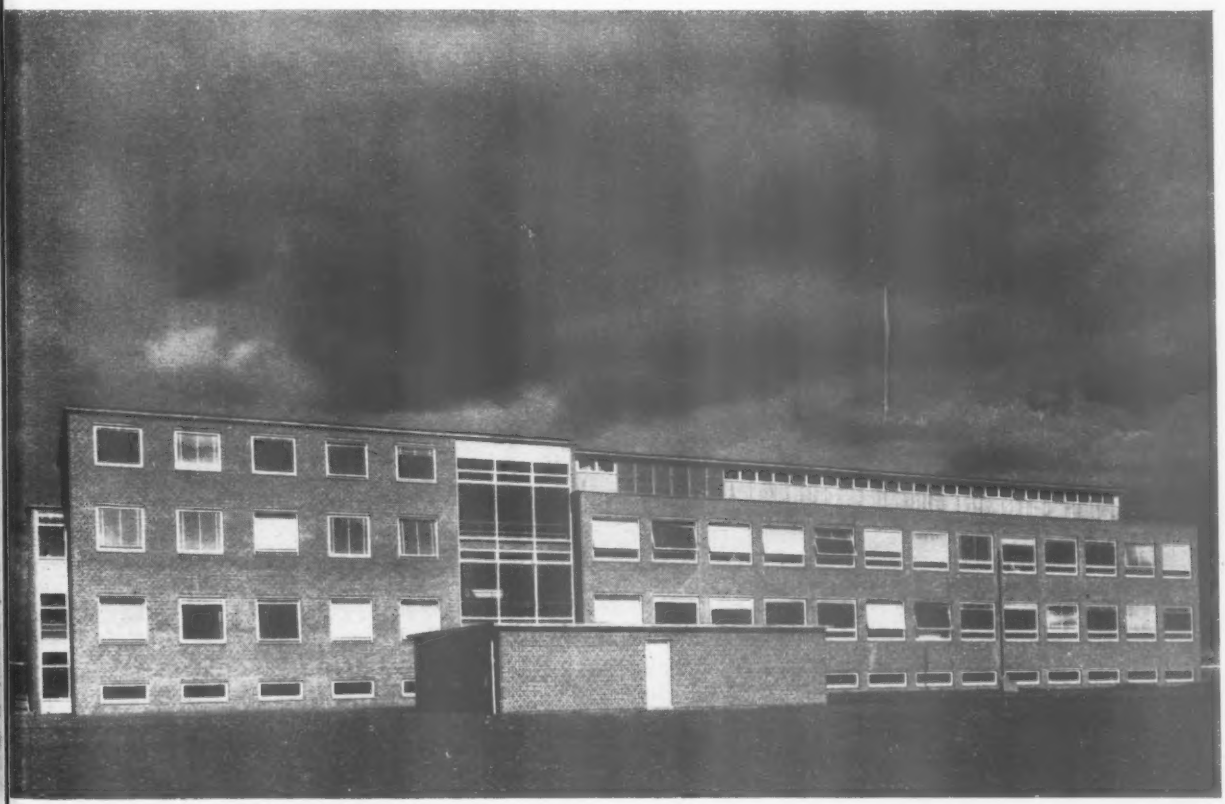
RESEARCH STATION

at LEVINGTON, near IPSWICH, SUFFOLK; designed by JOHNS, SLATER and HAWARD

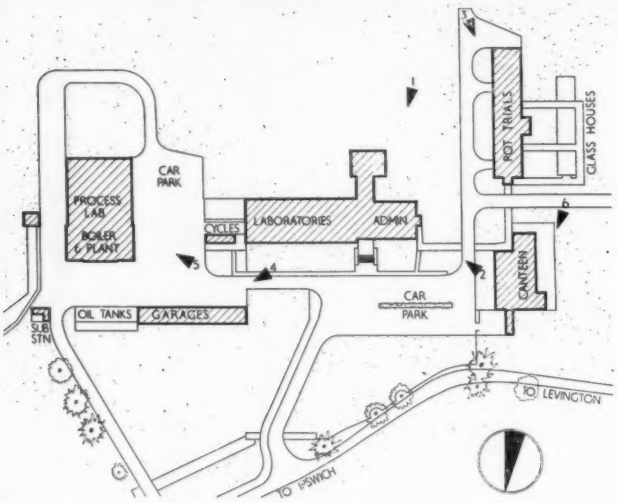
assistant architect J. L. HARDING; assistants H. G. FOSTER, R. MASON, W. F. UNGLESS, R. F. L. FENNER; consultants (structural) F. J. SAMUELY; (mechanical and electrical) A. H. BARKER and PARTNERS; quantity surveyors CASTON and PORRITT

Experience gained in industry over the last 20 years has firmly established the role of the scientific research worker whose contribution is now recognised as a basic requirement of planned industrial development. The new research station for Fisons Ltd., makers of artificial fertilizers, demonstrates how a group comprising client, architect, consultants and contractor have attempted to solve the many new problems involved in catering for this comparatively new branch of industry. This is the first industrial development where four separate blocks have been analysed individually.

Viewpoint 1: *the laboratory and administration block from the south.*



building illustrated



Site plan showing photographic viewpoints

CLIENT'S BRIEF

The layout and individual design of a number of separate blocks catering for a variety of functions related, in an organized sequence, to adjacent greenhouses, garden plots and field trial areas.

A scientist was appointed as liaison officer between the Director of Research and other interested specialists and the architect with his consultants.

SITE

The architect advised on the selection of a suitable site, which was a large open one in rural surroundings some 10 miles from Ipswich and lying adjacent to the main Felixstowe-Ipswich Road. Extensive lawn laying and tree planting has been undertaken by the client.

PLAN

The very nature of the work carried out at the Station demanded maximum flexibility in internal planning arrangements for the majority of the blocks. This has resulted in a series of simply constructed units adopting regular plan shapes.

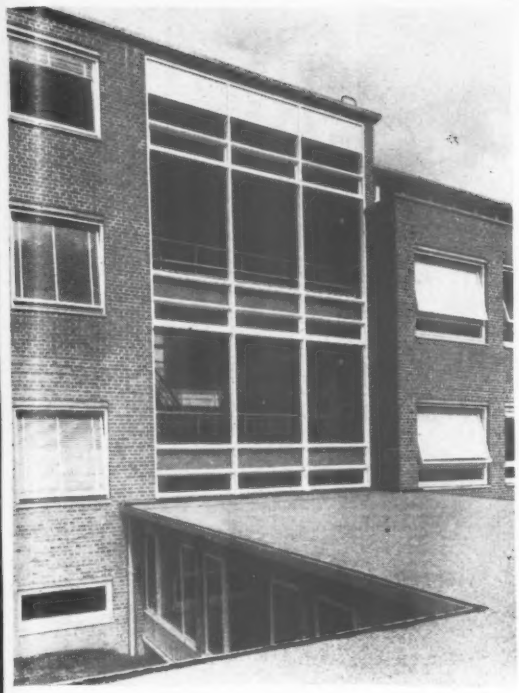
Relation of units: the individual blocks have been so related as to cater for a fundamental flow of work generating from the main laboratory block, and at the same time, to allow for any future programme for the extension of individual blocks.

TIME SCHEDULE

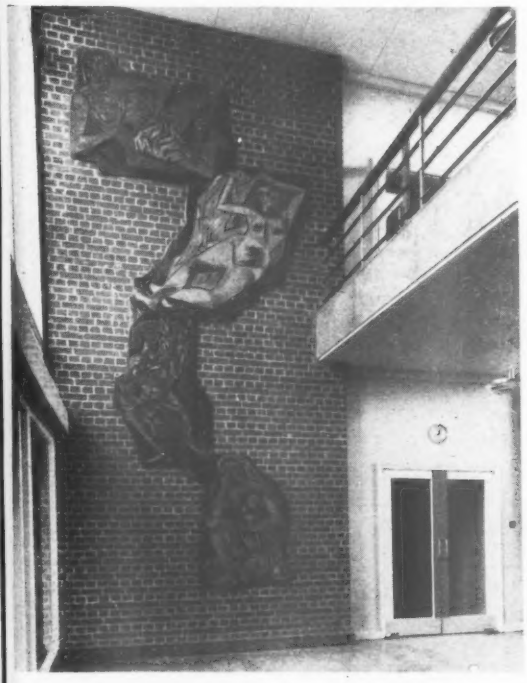
Tender date: September 24, 1954.
Work began: November 15, 1954.
Work completed: April, 1957.
Type of contract: RIBA.

Viewpoint 2: the laboratory and administration block from the north-west. The laboratories, on the extreme left, are roughly separated from the administration wing by the main entrance and staircase, whilst above the laboratories is a long plant room containing fume extract and ventilating plant, water storage tanks and lift engines, etc.: the double glazed horizontally pivoted windows provide most of the natural lighting to all departments within this block. Owing to the size of window involved—viz., approximately 8 ft. by 5 ft.—it has been considered advisable to restrict the opening by means of a sliding stay at the head. This block is built with a reinforced concrete frame enclosed mainly in brick but with vertical cedar boarding to the external staircase wall at the end of the administration wing and also to the plant room on the second floor.

analysis



The main staircase window appearing on the south side of the administration and laboratory block. The h.c.h. double glazed windows on this elevation have, located between the wide-spaced double glazing, plastic-louvred venetian blinds. This picture was taken from the roof of the visitors block which lies on the axis of the main entrance hall and is connected to the main block.



A detail of the sgraffito mural panels, by John Sutton, appearing on a blank wall within the entrance hall. This involves a technique of etching plaster to expose colours applied in superimposed coats. The bronze balustrading to the first floor landing can also be seen; the Derbydene stone on the edge of the landing is also used as a facing to the staircase in this hall.

laboratories and administration

MAIN CONSTRUCTION

A multi-storey block with an in-situ concrete frame, precast concrete intermediate floor beams, brick and timber cladding.

cost per sq. ft. (based on final account)	s	d
preliminaries and insurances	1	9½
contingencies	2	1¾

STRUCTURAL ELEMENTS

Work below ground floor level 4 10

Pad foundations generally, of reinforced concrete. Lowest storey forms a semi-basement for the whole area of the building, with floor incorporating column bases.

External walls and facings 5 3½

Non-load bearing, generally: facing bricks—cavity —common brick or breeze block inner skin.
St. Andrews bond with flush joints.
Plant room on second floor, cladding of Western red cedar on timber frame.

Ratio: $\frac{\text{solid wall}}{\text{floor area}} = \frac{0{\cdot}4512}{1}$

Frame or load bearing element 2 11

Throughout administration block, laboratories and visitors' section, in-situ columns and beams of reinforced concrete.

	Beam spans	*Column grid*
Administration	18 ft.	10 ft.
Laboratories	21 ft.	10 ft.
Visitors'	20 ft.	10 ft.

Upper floor construction 4 4

In corridors, prestressed planks on in-situ r.c. beams with concrete topping, finished screed in preparation for p.v.c. tiles. Generally, precast and prestressed joints on in-situ beams with concrete topping, r.c. with asbestos formwork left in, and screed finished in preparation for p.v.c. tiles.

Staircases 1 10½

Height from floor to floor, 12 ft. Three staircases in in-situ r.c.: to Administration, finished Derbydene stone; to Laboratory, finished quarry tiles; escape from administration block, finished p.v.c. tiles.
Widths: 5 ft. Total rise: 83 ft.

Roof construction 2 7½

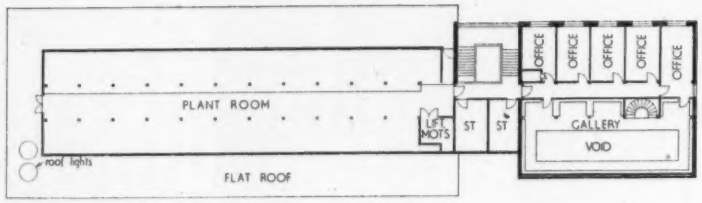
Administration and laboratories, as upper floors, precast and prestressed joists on in-situ beams with concrete topping, vermiculite screed, covered with built-up felt with grit finish. Area: 661 sq. yd.
Plant room and visitors' block, in-situ r.c. with vermiculite screed, covered with built-up felt with grit finish. Area: 649 sq. yd.

Rooflights 4¾

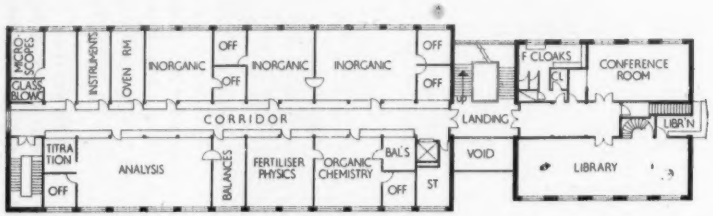
Secondary stairs and visitors' corridor, non-ventilating dome lights.
Above library, dome lights and glass brick in concrete frame.
No. of rooflights: 11. Total area: 570 sq. ft.

Windows (cost includes sills and glazing) 5 4

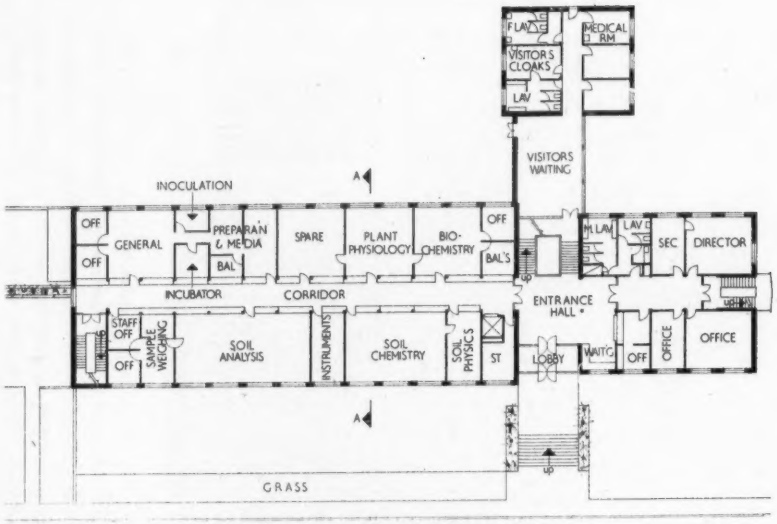
Administration and laboratories, softwood, double-glazing, pivot hung.
Elsewhere, softwood, single glazing.



Second floor plan

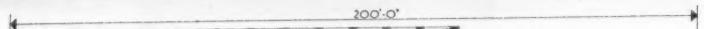


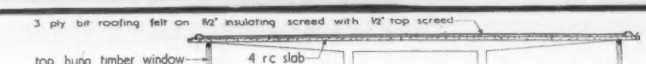
First floor plan

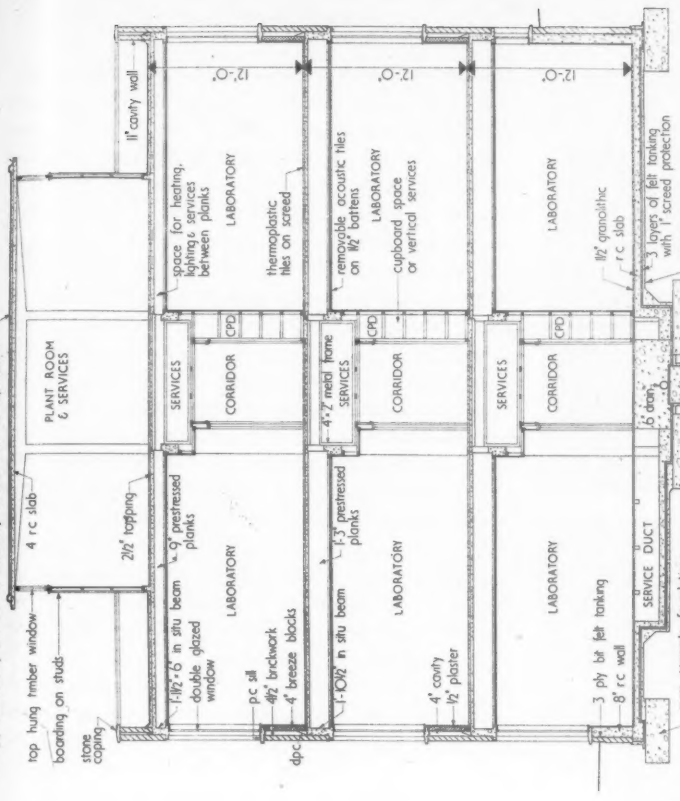


Ground floor plan, laboratory and admin. block (Scale: $\frac{1}{16}$" = 1' 0")

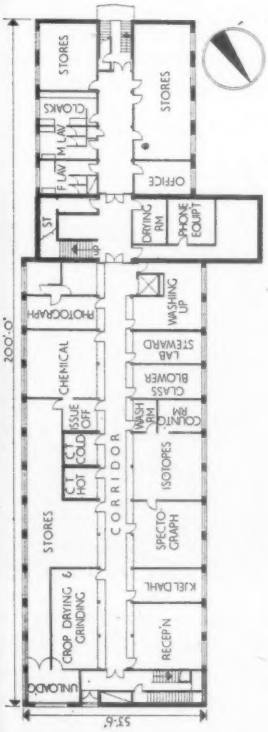
A typical corridor within the laboratory block showing the battery of painted flush doors to both sides enclosing the wide vertical ducts which separate the laboratories from the corridor. Entrance doors to laboratories are finished with a waxed hardwood veneer and contain a glazed vision "porthole." Each 10-ft. bay has three compartments, one of which provides free space for a doorway or, if not required, general storage space with the remaining two spaces available for services. This arrangement makes possible the provision of a self-contained one-man laboratory 10-ft. wide with larger laboratories based on a multiple of this bay measurement. All fume cupboards occur on the corridor wall where, in this scheme, fume extract problems can be dealt with more easily. The corridor floor is finished with p.v.c. tile, whilst the suspended ceiling, fully demountable, is formed with perforated metal trays backed with glass-fibre. Fluorescent lighting panels are spaced along the length of the corridor.



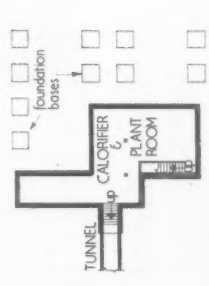




Section A-A
[Scale: 1/8" = 1' 0"]



Ground floor plan, laboratory and admin. block [Scale: 1/32" = 1' 0"]



Sub-basement plan

Fluorescent lighting panels are spaced along the length of the corridor.

analysis

laboratories and administration (continued)

	s	d
Frames painted. Glazing generally, ¼-in. polished plate. Sills of artificial stone. Ratio: window area / floor area = 0·1793 / 1		
External doors (cost includes glazing) Plywood faced, resin bonded softwood, fully glazed, and painted. Ratio: external door area / floor area = 0·0064 / 1	2	
Venetian blinds Self-coloured plastic, on south elevation between double glazing.	3	

PARTITIONING

Internal partitions Administration, breeze, plastered and painted. Lavatories, breeze, tiled to full height. Area of breeze partitioning, 10,503 sq. ft. Partitions in laboratories consist of patent panels (10 ft. high × 3 ft. 4 in.) of insulating material, approximately 1¼-in. thick, faced each side with hardboard, painted on the site. These are supported in extruded aluminium "H" sections standing on the floor, or bench services dado, and wedged from the floor or roof beams by a spring jack. Area of patent partitioning, 15,606 sq. ft. Chosen for flexibility, as they are designed to be capable of demounting and re-erecting in any 10-ft. grid.	3	6¾
W.c. doors and partitions Metal-faced ply, painted.		1½
Internal doors Plywood faced, flush softwood, painted, and fully glazed. No. of single doors: 88. No. of double doors: 18.	1	2¾
Ironmongery Swedish, cast nickel silver.		8¾

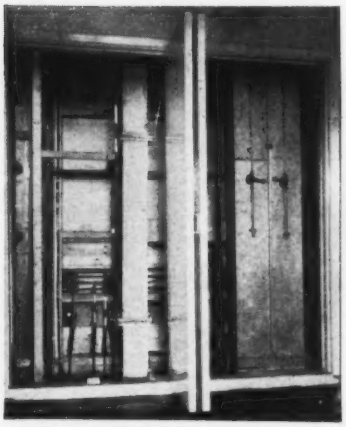
FINISHES

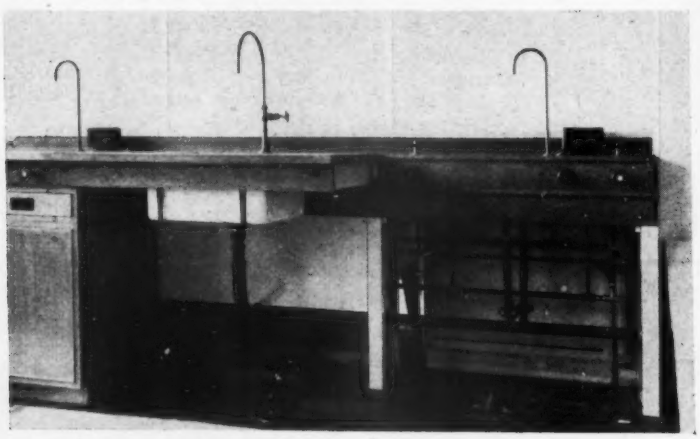
Floor finishes 6 4½

Location	*Type of finish*	*Cost per sq. yd.* s.	d.	*Area in sq. yd.*
Entrance and stairs	Derbydene stone slab	88	7	251
Labs. and corridors	P.v.c. tiles	48	6¾	1,684
Library and conference room	T & G cork tiles	54	3½	269
Lavatories	Ceramic tiles	63	11¾	178
Offices	Lino	30	1½	611
Stores	*In situ* granolithic	11	0½	544

Wall finishes Plaster generally. Library, conference room and stairs, panelled mahogany, polished. Lavatories, tiled. Entrance hall, block, facing bricks as external walls.	1	5
Ceiling finishes Laboratories and corridors, metal acoustic tiles, enamelled.	2	3¼

building illustrated





Far left: vertical ducts are set between the central corridors and the laboratories, which occur to either side. They are readily accessible from the corridor as illustrated in this detail. Painted flush doors conceal the spaces which are planned to serve, comprehensively, each 10-ft. bay by allocating two-thirds of the space for service runs and/or general storage and the remaining third for corridor/laboratory access or storage. All piped services are identified by coloured bands and some idea of the complexity of the arrangement can be appreciated from the fact that no less than seven separate piped services have been catered for in addition to fume extract and vent ducts, rainwater pipes, waste pipes and electrical wiring. Left: A section of the perforated metal tray suspended ceiling has been removed to expose the multiplicity of services occurring in the ceiling space. This main horizontal run of services can readily link up with the vertical ducts situated on each side of the corridor. Centre left: a typical arrangement within a laboratory with a " service dado " on the 10-ft. grid from which work tops are cantilevered; cupboards and drawers can be slid underneath. The sink has been supported by m.s. straps fixed to the underside of the work top. Solid or glazed partitions can be placed on this grid and are easily demountable. The floor finish is p.v.c. tile. Each 10-ft. bay, within the laboratory block, is self-contained from the point of view of services and drainage as well as natural light and has artificial lighting and heating panels in the ceiling. Within each 10-ft. bay the ceiling is divided into five 2-ft. wide strips with the two outer strips, of perforated metal acoustic panels, concealing service and drainage runs in the floor space above; the next two strips, moving towards the centre, contain fluorescent lighting and, finally, the centre strip provides radiant heating panels and ventilating grilles. Bottom left: a detail showing the cantilevered work tops abutting the " service dado " which can occur on any 10-ft. grid line at right angles to the window wall of a laboratory. Cupboard and drawer units, work tops and demountable partitioning are all based on a 3-ft. 4-in. module. Access panels can conceal services beneath the dado top when cupboards, etc., are not required.

Above: the reference library, with its gallery, overlooks the south of the site. An alcoved arrangement off the gallery provides study areas for those research workers who have no private offices. The furniture was chosen by the architects. Wax polished cork tiles provide the floor finish. The air conditioning grilles appear beneath the gallery projection on the left.

analysis

laboratories and administration (continued)

	s	d
Administration, fibreboard acoustic tiles, finished water paint. Lavatories and stairs, fibreboard sheet, finished water paint.		
Decoration Timber and metal, full gloss; walls, emulsion; ceilings, water paint; laboratory walls, semi-gloss. BS 2660. Colour scheme: externally, all frames and glazed doors painted white. Internally, all window frames, glazed doors and ceilings painted white. Laboratory corridor cupboards, 9–083; doors to labs. on ground floor, 0·005; doors to labs. on first floor, 0·012; lab. partitions, 3·033; doors in partitions, 0·001 and 0·008. Lab. walls, 5·058.	1	6¾

FITTINGS

Cloakrooms Lockers in administration, stove-enamelled steel.		2½
Other fittings Book shelves in library, in polished African mahogany. Cupboards in corridors, painted hardboard, flush doors. Counter and librarians desk, polished hardwood.	2	7½
Laboratory fittings Moulmein teak, faced and lipped blockboard tops, oiled and waxed. Based on 3 ft. 4 in. module to provide maximum flexibility for arrangement.	14	5¾

SERVICES

Plumbing, external Lead flashings. Rainwater disposal, connected to clients' own system. Administration, cast iron; laboratories, p.v.c.; visitors' block, asbestos.		¾
Plumbing, internal All chemical drainage is run in p.v.c. pipes and connects to vertical 4-in. p.v.c. pipes in the corridor service cupboards. These pipes are continued upwards to take the roof rain-water. At the base they discharge into receivers situated in manholes in the corridor of the semi-basement. These manholes are connected by chemical stoneware drains which run to a sand separating pit outside the laboratory and thence across the site to delay and treatment tanks. Waste disposal to: sanitary fittings, copper; laboratory fittings, p.v.c; internal r.w.p.s, p.v.c. Cold water installation, copper pipes from mains and storage tanks in plant room. (Cost includes gas installation: m.s. tubing for mains, copper for distribution.)	12	2¼
Sanitary fittings Lavatories, white glazed stoneware. L.b.s in ranges of 2 and 3, urinals, ditto. w.c.s high level. Type of fitting: L.b. Urinals W.c. No. of each type: 16 8 12 (Cost includes waste branches.)		3¾

	s	d
Heating, ventilation and laboratory services (cost includes space of boiler, ventilation system and hot water installation) Steam from the boiler house runs to a calorifier in the sub-basement which serves low pressure hot water to radiant panels in the ceilings of the whole of the laboratory section and in the cloakrooms, and ventilated recessed heaters under windows in offices of the Administration section. The panels are controlled thermostatically and separately from the north and south sides of the building. The heating of the ventilating air is controlled automatically at a constant temperature to avoid draughts. For the air in the ducts in the library and conference room heaters are controlled separately by room temperature, to allow for variations in the number of people present. Air extracted from the laboratories is exhausted to atmosphere, but that from the library and conference room can be recirculated when desired by damper control.	29	9
Ventilation system (cost included above) Sheet metal ducting serves filtered constant temperature air through ceiling grilles to laboratories, library and conference room. Air is also extracted through sheet metal ducting and either discharged or re-circulated through the plenum system. The extract system is designed to work in conjunction with the fumes extract system and the ducting is asbestos cement. All plant is in the roof plant chamber of the laboratory section, from which main horizontal ducts pick up the vertical droppers in the corridor cupboards in each 10-ft. bay.		
Other services to laboratories (costs included above) Hot water, cold water, demineralised water, gas, compressed air and vacuum.		
Drainage (costs given in cost summary) Chemical (labs.), p.v.c. + s.g. pipes (chemical). Soil (toilets), s.g. stoneware (normal).		
Electrical installation Fluorescent fittings in the laboratory section fitted into ceiling construction have flush removable glass panels; 13 amp. sockets on benches; fuseboards are located in corridor cupboards. Generally lighting is tungsten, and 13 amp. sockets are provided in each room or bay. All cables are p.v.c. insulated and sheathed.	11	7
Lifts (Cost includes builders' work, i.e. r.s.j.s in motor room, finishings to door openings, but not the formation of the shaft.) Passenger lifts from semi-basement to first floor, with motor room in second floor plant room. Fully automatic push button control. Room for 8 people.	1	5
Total cost per sq. ft. of floor area: $\frac{£236,315}{38,780 \text{ sq. ft.}}$ =	121	10½
Special acoustical treatment Lab. and corridor ceilings lined with perforated metal tray with glass fibre infil.		
Fire No special precautions.		

building illustrated

Viewpoint 3: from the south-east. The pot trials building, with its prismatic roof construction composed of precast concrete trough units and in-situ *valley beams on precast concrete tie beams and columns, is an isolated single-storey block. This building provides accommodation for the preparation and testing, in conjunction with glasshouses, of the effects of new substances on plant growth by means of large numbers of pot samples. Internal divisions are non-structural as a large flexible space was required.*

analysis

pot trials building

MAIN CONSTRUCTION

A single-storey building with prismatic roof composed of precast trough units and in-situ valley gutters, supported by precast concrete columns and tie beams on mass concrete bases. In-situ ground beams span between columns.

	s	d
cost per sq. ft. (based on final account)		
preliminaries and insurances	1	0¾
contingencies	1	3¼

STRUCTURAL ELEMENTS

Work below ground level — 5 0¼
Foundation: in-situ r.c. ground beams, supported on bases. Floating slab.

External walls and facings — 2 4
Non-load bearing walls to soil sterilisation dept., pot store, offices, common brickwork inner skin, facing brickwork outer skin, with flush joints. Preparation and observation depts. and laboratory, wood wool slabs faced on both sides with exterior quality plywood, painted.
Ratio: solid wall / floor area = 0·3710 / 1

Frame or load bearing element — 4 4¾
In-situ column and in-situ precast tie beams generally, of reinforced concrete. Beam span: 33 ft. Column grid: 10 ft.

Roof construction — 13 10½
A pitched roof overall, of precast concrete trough units and reinforced concrete topping, finished with built up bitumen felt with grit finish.
Area: 599 sq. yds.

Roof lights — 1 6½
Fixed lights in pitch of roof, made of steel glazing bars covered with lead. ¼-in. georgian wired glass.
No. of rooflights: 25. Total area: 550 sq. ft.

Windows (cost includes sills and glazing) — 3 2¾
Softwood frames. Single glazed fixed lights and opening fanlights. Painted.
Ratio: window area / floor area = 0·2523 / 1

External doors — 6¼
Half-glazed doors to glasshouses; elsewhere flush, with portholes, or framed, ledged and braced, sliding doors. All of painted softwood.
Ratio: external door area / floor area = 0·2270 / 1

PARTITIONING

Internal partitions — 9¾
Non-load bearing brick, fair-faced, distempered.
Area: 157 sq. yds.

W.c. doors and partitions — 2
Metal-faced plywood, painted.

Internal doors — 9¼
Plywood faced flush, painted.
No. of single doors: 7. No. of double doors: 3.

Ironmongery — 1 0½
Satin chrome.

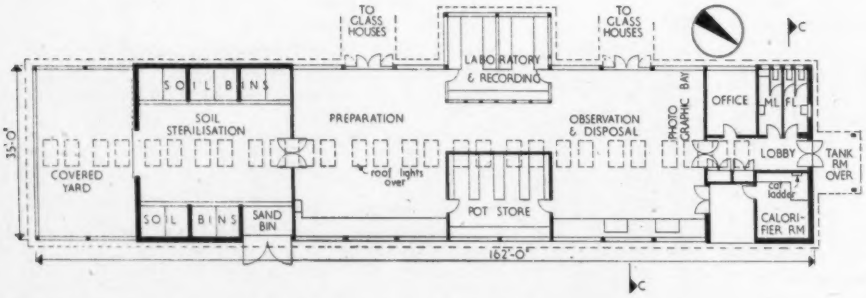
FINISHINGS

Floor finishes — 1 1

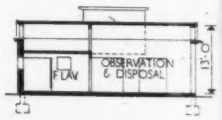
Location	*Type of finish*	*Cost per sq. yd.*	*Area in sq. yd.*
Generally	Granolithic	9 5¾	396
Office & lab.	Lino	23 10½	50
Lavatories	Quarry tiles	36 4½	13

Wall finishes — 2½
Generally, fair-faced brickwork, painted.
Offices and lavatories, painted plaster.

Ceiling finishes — 1 9¾
Generally fibreboard sheet, finished water paint.



Ground floor plan, pot trials building [Scale: 1/32" = 1' 0"]



Section C-C
[Scale: 1/32" = 1' 0"]

analysis

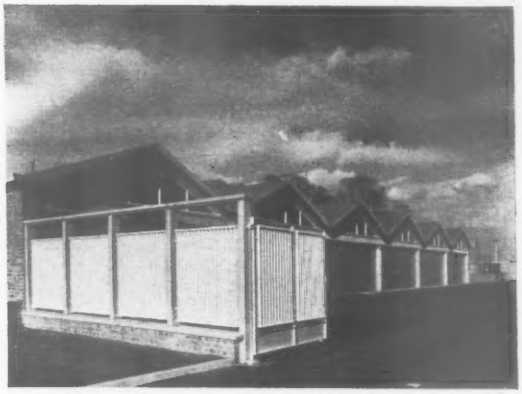
pot trials building (continued)

	s	d
Decorations	1	7½
Woodwork, full gloss paint; walls, emulsion; ceilings, water paint. BS 2660		
Colour scheme: externally, window frames, white; door frames, r.w.p.s, 9–096; frame to window panels, 9–094; panels within above frames, 6–073; entrance doors, 0–001.		
Internally, frames, white; panels, 9–095; columns and beams, 9–095; ceilings generally, 0–001.		
FITTINGS	3	5
In preparation room, potting benches of soft wood finished ⅛-in. rubber sheeting. Laboratory benches, as in main labs.		
Pot store, slat shelving of softwood, treated with wood preservative.		
Other finishes		1½
Guard rails and cat ladder in calorifier room, of galvanised tubing and steel, painted.		
SERVICES		
Plumbing, external		2½
Lead flashings. Asbestos cement rainwater pipes. (Cost includes gas installation, brought from main labs. to lab. in Pot Trials unit by copper pipes.)		
Plumbing, internal	2	4¾
The chemical drainage system throughout is entirely separate from the soil system. Rainwater is taken generally into the chemical system but road gullies and down pipes from some buildings, which are a distance from chemical drains, are taken to soakaways.		
Sanitary fittings		4½
White glazed stoneware in lavatories.		

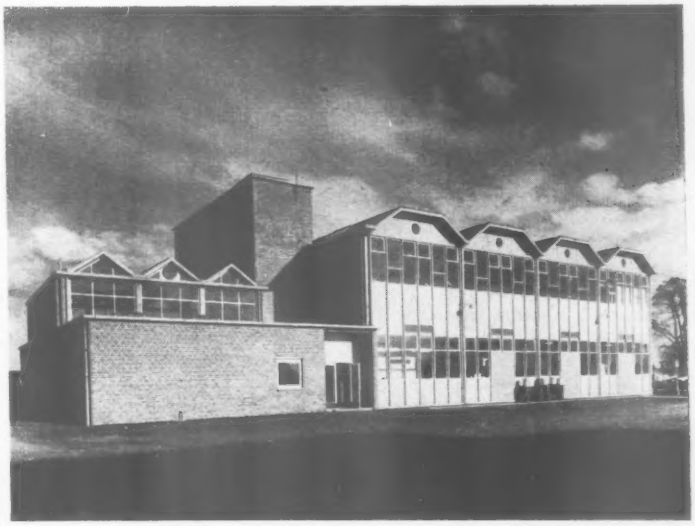
Type of fitting:	W.c.s	Urinal	Lavatory basins
No. of each type:	3	1	2

Heating installation (cost includes share of boiler)	17	4
Low pressure steam pipes are fixed horizontally, one on each side of the roof valleys, and the laboratory has in addition a low level heating coil. Heated from main boilers.		
Hot water installation (cost included under heating installation)		
Calorifier, serving lavatories from main boilers.		
Electrical installation	8	11½
Lighting and power generally. Tungsten lighting points and 13 amp. power sockets. Cables are p.v.c. insulated in conduit and mineral insulated. Flush fitting switches.		
Power supply from meter house. Distribution boards in cupboard in corridor.		
Total cost per sq. ft. floor area: $\frac{£18,825}{5,121 \text{ sq. ft.}}$ =	73	6¼

building illustrated



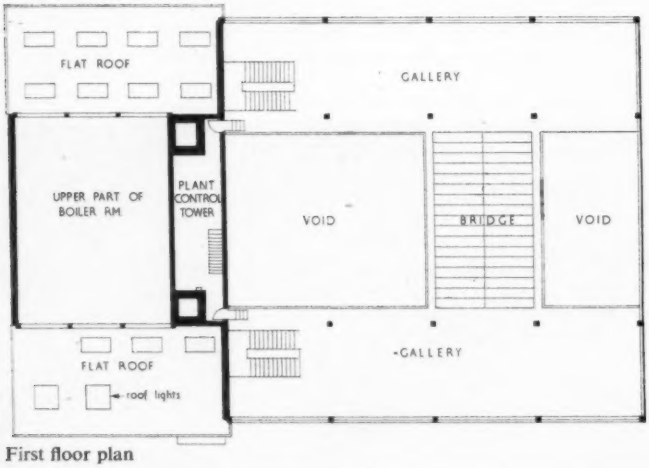
Viewpoint 4: the garage block to the north-east of the laboratories. This follows closely the form of construction used elsewhere with the articulated gables contributing towards a general design theme which has been adopted in consideration of a very assertive local building vernacular.



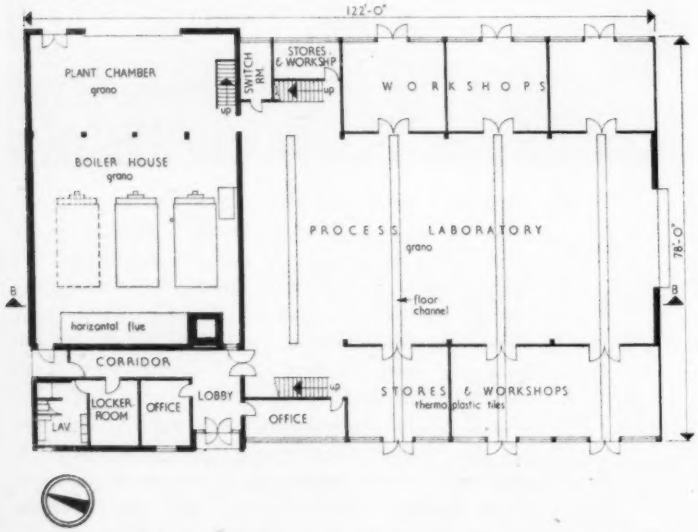
Viewpoint 5: the four tall bays on the right enclose the process laboratory, whilst on the left are housed the boilers serving the whole station together with the lavatories, locker rooms, and offices connected with this individual block. The brick tower dividing the two sections contains the main chimney, water storage tanks, fume-scrubbing chamber and extract plant. An in-situ *r.c. frame has been used throughout, with precast slabs and* in-situ *topping to form the folded-slab roofs (described on page 370). All roofs are finished with three-layer bituminous felt. The cladding, within the four bays on the right, is in undecorated asbestos cement sheets fixed between continuous precast mullions. Asbestos rainwater pipes are placed on outside walls. Concrete fascias and soffits are left undecorated.*

building illustrated

Looking across the process laboratory from one of the side galleries towards the demountable steel platform which spans between the galleries. This area is concerned with the functioning of pilot plant on a scale adequate to make preliminary investigations of factory production and at the same time to produce sufficient quantities of any new substance for effective testing in pot and field trials on the adjacent farms. The whole space is fully serviced. Unit heaters and air ducts work in conjunction with radiators in the side aisles.



First floor plan



Ground floor plan, process laboratory and boiler house [Scale: $\frac{1}{32}$" = 1' 0"]

analysis

process laboratory and boiler house

MAIN CONSTRUCTION

A two-storey in-situ concrete poured structure with a folded slab roof based on precast concrete units bound together with in-situ concrete topping. Clad with either brickwork or combination of glass and asbestos panels in lightweight precast concrete frame.

[cost per sq. ft. (based on final account)	s	d
preliminaries and insurances	2	11½
contingencies	3	5¾

STRUCTURAL ELEMENTS

Work below ground floor level — 7 7
In-situ ground beams on mass bases. Floating slab. R.c.

External walls — 6 8½
Boiler house, solid walls of fletton or gault inner skin. Facing brick outer skin, St. Andrews bond with flush joints.
Process laboratory, cladding of fluted asbestos sheet in panels in studding with wood wool as insulation. Rendered internally. There is a temporary end wall to process lab. to allow for extension.

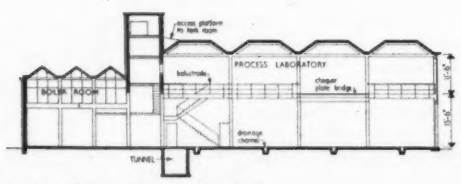
$$\text{Ratio: } \frac{\text{solid wall}}{\text{floor area}} = \frac{0{\cdot}8273}{1}$$

Frame or load-bearing element — 13 10
In-situ columns and tie beams r.c., and structural steel.
Boiler house: Flat, beam span 20 ft., column grid 10 ft.; folded, 40 ft.
Process lab.: Folded, beam span 40 ft., column grid 20 ft. and 18 ft.

Upper floor construction — 2 7½
Process lab. only. Prestressed planks on prestressed joists with concrete topping, r.c. with asbestos form work left in position. Finished grano.

Staircases — 2 8½
Process lab. only. R.c. with steel balustrade.
Grano finish with non-slip nosings.
Height from floor to floor: 15 ft. 6 in.
No. of staircases: 2.
Width: 4 ft.; total rise: 31 ft.

Roof construction — 11 3¼
Pitched, generally, of precast trough units with r.c. topping, finished vermiculite screed covered with built up bitumen felt, grit covered.
Labs. and plant room, flat, in-situ concrete, finished like the rest.
Area of pitch roof: 4,545 sq. ft.
Area of flat roof: 4,878 sq. ft.



Section B-B [Scale: $\frac{1}{32}$" = 1' 0"]

analysis

process laboratory and boiler house (continued)

s d

Roof lights 1 1¼
Non-ventilating, except in toilets, of steel glazing bars, covered with lead, with 4-in. georgian wired glass.
No. of rooflights: 36.
Total area: 828 sq. ft.

Windows 1 4½
(Cost includes sills and glazing.)
Fanlights top hung. Softwood painted frames.
Ratio: $\frac{\text{window area}}{\text{floor area}} = \frac{0{\cdot}2636}{1}$

External doors (cost includes glazing) 7
Painted softwood.
Ratio: $\frac{\text{external door area}}{\text{floor area}} = \frac{0{\cdot}099}{1}$

PARTITIONING

Internal partitions 2 8
In offices of boiler house, plastered breeze.
In laboratories, engineering brick, painted one side with acid resisting compound.
Area of breeze: 98 sq. yd.
Area of brick: 545 sq. yd.

W.c. doors and partitions ½
Metal-faced ply, painted.

Internal doors 4¾
Plywood faced, flush, painted.
No. of single doors: 13.
No. of double doors: 7.

Ironmongery 9¾
Generally, Swedish, silver bronze.
In process lab. and workshop, iron, painted with acid-resisting paint.

FINISHINGS

Floor finishes 2 0½

Location	*Type of finish*	*Cost per sq. yd.* s.	d.	*Area in sq. yd.*
Process lab. and boiler house	Granolithic	12	0	1,314
Offices	Thermoplastic tiles	19	4¾	57
Lavatories	Quarry tiles	38	4	23

Wall finishes 3½
Process lab block, engineering bricks, fairfaced and pointed with acid-resisting cement.
Boiler house block, gault bricks, fairfaced.
Offices and lavatories, plastered throughout, finished emulsion paint.

Ceiling finishes 4
Generally, precast concrete roof units, fairfaced, unpainted.
Offices and lavatories, plaster finished water paint.

Decorations 10¾
Timber and metal painted with full gloss paint; walls with emulsion paint; ceilings with water paint. All BS 2660.

s d

Colour scheme: externally, window frames, white; double doors 9–096; door frames, 9–094.
Internally: window frames, white: door frames, 9–094; doors, 9–096; balustrades 9–096; walls (where decorated) 9–093; wall in lobby facing entrance, 0–001.

SERVICES

Plumbing, external 2½
Lead flashings and asbestos cement r.w.p.'s.

Plumbing, internal (cost includes cold water installation) 10 10¾
Waste disposal, galvanized iron in lavatories.
Chemical drainage from process lab., cream glazed acid resisting pipes.
Cost includes gas installation: 2-in. ring main is provided below the gallery with branches and plugged tees at regular intervals for future connections. All copper.
Cold water installation in process lab. and lavatories: copper.
Soil drainage from lavatories, normal s.g. ware.

Sanitary fittings 3½
White glazed stoneware.

Type of fitting:	L.b.	W.c.	Urinal	Shower
No. of each type:	3	1	1	1

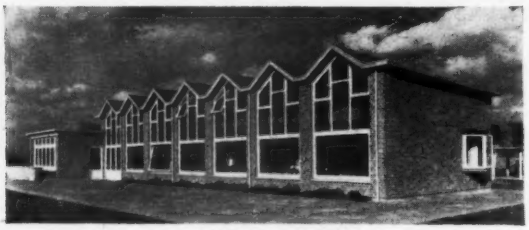
Heating and ventilation installation (cost includes space of boiler, ventilation system and hot water installation) 38 2½
Unit heaters in process lab draw fresh air through ducts or recirculated air, and are served by steam mains. Cloakrooms and offices are heated by high level pipe coils and floor mounted enclosed heaters respectively.
No. 2 steam boilers, oil fired, and each giving 6,000 lb. of steam per hour.
Extract fans in boiler house gables (No. 2) and process lab. gables and roof (No. 16).

Drainage 3 8½

Electrical installation (cost includes wiring and power supply) 11 7¼
Fluorescent lighting is provided in the process lab and tungsten in the boiler house. A continuous busbar trunking system is provided for the full length of the central area under each gallery.
Wiring is p.v.c. insulated cables in conduit or steel trunking with surface mounted switches.
Total cost per sq. ft. floor area: $\frac{£58{,}396}{9{,}225 \text{ sq. ft.}}$ = 126 7¾

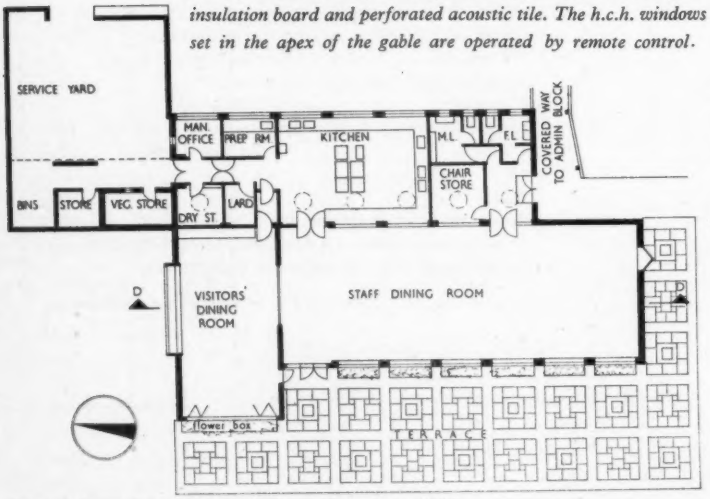
Fire
No. 2 fire hoses in process lab.
Planning precautions: Opening out doors to each bay on ground floor, and two staircases from gallery.

building illustrated



Viewpoint 6: the staff canteen, seen from the south-west. It overlooks a pleasant stretch of Suffolk countryside. Like the other blocks, already described, it is essentially a r.c. framed structure with a folded-slab roof employing a combination of in-situ and precast concrete, details of which occur elsewhere in this article. The external brickwork is flush jointed and employs the St. Andrews bond. Fascias and soffits are undecorated and also the asbestos rainwater pipes, with only the window frames and doors painted white.

Part of the interior of the staff canteen; its soffit is lined with insulation board and perforated acoustic tile. The h.c.h. windows set in the apex of the gable are operated by remote control.



Ground floor plan, canteen block [Scale: 1/32" = 1' 0"]

analysis

canteen block

	s	d
cost per sq. ft. (based on final account)		
preliminaries and insurances	1	6½
contingencies	1	9½

STRUCTURAL ELEMENTS

Work below ground floor level 4 7
In situ ground beams supported on pad bases.
Floating slabs.
R.c. throughout.

External walls and facings 5 0
Cavity generally. Fletton brickwork inner skin, facing outer skin at 412s. 6d. per 1,000. Bonded with flush joints.

$$\text{Ratio: } \frac{\text{solid wall}}{\text{floor area}} = \frac{.0{\cdot}5155}{1}$$

Frame or load-bearing element 11½
Precast and in-situ frame elements in dining area, r.c. Beam span, 26 ft., column grid, 10 ft.
Elsewhere, brickwork.

Roof construction 13 2½
Dining area, pitched roof of precast concrete units. Area, 290 sq. yds.
Elsewhere, flat. Precast concrete units. Area, 237 sq. yds.
Finish throughout, bituminous felt on vermiculite screed.

Roof lights 6¾
Non-ventilating over staff entrance and kitchen, roughcast glass.
No. of roof lights: 6. Total area: 58 sq. ft.

Windows 5 9¼
In dining area, high centre pivot hung.
Directors' room, sliding folding windows.
Elsewhere, casements. All of painted softwood.

$$\text{Ratio: } \frac{\text{window area}}{\text{floor area}} = \frac{0{\cdot}2347}{1}$$

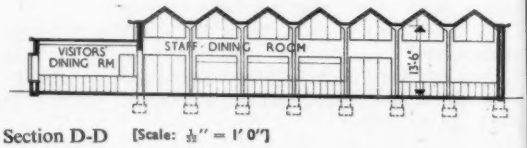
External doors 2¾
Solid doors. In staff dining room, polished hardwood.
Elsewhere, painted softwood.

$$\text{Ratio: } \frac{\text{external door area}}{\text{floor area}} = \frac{0{\cdot}0527}{1}$$

Glazing
Large windows in dining room of ¼-in. polished plate.
Elsewhere, clear 32-oz. sheet.

PARTITIONING

Internal partitions (cost includes w.c. partitions) 11
Non-load bearing brick and breeze generally, finished plaster or glazed tiles.
Between dining rooms, stud partition, finished



Section D-D [Scale: 1/32" = 1' 0"]

analysis

canteen block (continued)

s d

perforated fibreboard one side and plaster the other.
Area of brick or breeze: 1,530 sq. ft.
Area of stud partition: 234 sq. ft.

W.c. doors and partitions
Off staff dining room: breeze partitions, finished glazed tile, ply faced flush doors, painted.

Internal doors (includes w.c. doors) 10¼
Ply-faced, solid, flush, painted, generally.
Staff dining room door, glazed, with waxed hardwood frame.

Ironmongery 1 6½
Swedish design, silver bronze throughout.

FINISHINGS

Floor finishes 4 8½

Location	*Type of finish*	*Cost per sq. yd.* s.	d.	*Area in sq. yd.*
Dining rooms	T & G maple blocks, wax polished	49	4¾	295
Kitchen, etc.	Brown quarry tiles	33	3	119
Lavatories	Ceramic tiles	91	3	16
Office	Thermoplastic tiles	19	0	7
Store	Granolithic	10	0	18

Wall finishes 2 8½
Dining room, perforated fibreboard, finished gloss paint.
Lavatories, white glazed tile.
Kitchen, plaster, finished anti-fly paint.
Elsewher, plaster, finished water paint.

Ceiling finishes 1 9
Dining room, fibreboard panels, finished semi-gloss paint.
Visitors' dining room, perforated fibreboard, finished water paint.

Decorations 1 1¼
Woodwork, full gloss paint; walls, emulsion paint; ceilings, water paint; kitchen, insecticidal lacquer.
All BSS 2660.
Colour scheme: frames, skirtings, architraves, linings, ceilings, glazed doors, white. Entrance lobby ceiling, 0·001.
Main dining hall, columns, gable frames, 9-093 with panels between of 4-048.
North and south walls, 0·005. Sloping ceilings, 4-047.
Small dining room, doors, 0-094. Walls, 5-065.

FITTINGS

Shelving 2 1¼
In dry store and vegetable store, of natural softwood.

Kitchen equipment 15 0
Gas and steam heated cooking equipment, stainless steel.
Built-in cold chamber.

SERVICES

Plumbing, external 2¾
Lead flashings at roof intersections.
Rainwater disposal, painted asbestos downpipes, at ends of valley gutters.

Plumbing, internal 1 4½
(Cost includes cold water installation of mains and stores throughout, and gas installation: m.s. tubing for mains, copper for distribution.)
Painted copper in kitchen and lavatories.

Sanitary fittings 8¼
White glazed stoneware in lavatories.

Type of fitting:	L.b.	W.c.	Urinal
No. of each type:	5	2	1

Heating installation 7 10
(Cost includes share of boiler and hot water installation.)
Low-pressure accelerated hot water system with radiant wall panels in dining rooms and radiators elsewhere. Painted.
Steam comes from main boilers to calorifier in Pot Trials Unit.
The steam main from the boiler house runs via the tunnel, semi-basement corridor ceiling duct of the main block, and an outside duct past the canteen to the calorifier room in the Pot Trials unit, whence hot water is taken back to the canteen.

Ventilation system 8
An extract fan in the kitchen.

Hot water installation
(Cost included under heating installation.)
In kitchen and lavatories, hot water from calorifier in Pot Trials Unit.

Drainage
(Cost given in Cost Summary.)
Separate from kitchen and lavatories. Salt glazed. Normal jointing.

Electrical installation 5 1¼
Tungsten generally; fluorescent in kitchen.
P.v.c. wiring in conduit. Flush satin chrome switches throughout.
Power supply from main meter house, 250 volt.
Distribution board in chair store.

Paved areas
(Cost given in Cost Summary.)
Terrace of buff and grey concrete slabs patterned with facing brick panels provided for use of staff.

Total cost per sq. ft. floor area: $\frac{£18,578}{4,120 \text{ sq. ft.}}$ = 90 2¼

Special acoustical treatment
Perforated fibreboard tiles for part of ceiling and end walls of dining room.

Refuse disposal
Storage bins in covered area within service yard

analysis

COST SUMMARY

Building	*Ground floor area, sq. ft.*	*Total floor area, sq. ft.*	*Work below G.F. level* £ s. d.	*Work above G.F. level* £ s. d.	*Total cost* £ s. d.
Lab. and admin.	37,770	38,780	9,371 16 8	226,943 15 10	236,315 12 6
Pot trials	5,121		1,285 11 8	17,539 8 6	18,825 0 2
Canteen		4,120	944 3 4	17,634 9 2	18,578 12 6
Process lab.	9,225		3,497 16 3	54,898 7 2	58,396 3 5
Covered way					522 3 8
Glasshouses Garages Cycle store Oil compounds Sub-station					13,822 6 7
External tunnels and engineering services					5,239 10 10
Roads, paths, etc.					15,188 8 11
Soil drainage and sewage work					3,661 11 8
Rainwater and chemical drainage					9,894 15 10
Telephone, lighting and water mains					3,172 2 0
Cooler unit					1,170 0 0
Mock-up					1,740 0 0
Sundry bill					510 0 0
Total value of scheme (note all prices based on final account)					387,036 8 1

COST COMMENTS

The detailed consideration given by the architect and his development team to these buildings should satisfy the client that, at least from the " cost " point of view he has got full value for money. The brief was unusual, with highly specialised requirements, and this has resulted in an unusual distribution of costs over the different elements. To emphasise this distribution, the four analyses are compared below, their costs per square foot divided into grouped functional elements:

Structural elements: not surprisingly the structure of the multi-storey block is more economical than the single-storey blocks. With the process lab. and boiler house, the large proportion of void at gallery level has resulted in a much larger perimeter to floor area ratio than in the other buildings. This is partially offset by the cheaper form of construction for the solid walls—i.e. $\frac{6s.\ 8\frac{1}{2}d.}{0{\cdot}8273}$ = unit cost of 8s. 1½d. per square foot of wall, as compared with the solid walls in the administration block at $\frac{5s.\ 3\frac{1}{4}d.}{0{\cdot}4512}$ = unit cost of 11s. 8½d. per square foot of wall. The pitched roofs of the pot trials, canteen and process lab. have added considerably to the element " frame " on this particular block. Of interest is the unit cost of the admin. block's windows, at $\frac{5s.\ 4\frac{3}{4}d.}{0{\cdot}1793}$ = 30s. 1¼d. per sq. ft. of window.

Partitioning elements: apart from the patent partitioning in the admin. block, the internal partitions are of conventional construction, and this is reflected in the individual element costs.

Finishings: the admin. block and canteen have been given a good " prestige value " without undue expense.

Fittings: in some types of buildings the laboratory fittings (at 14s. 5¾d. per sq. ft. of floor area) and kitchen equipment (at 15s. per sq. ft. of floor area) might be regarded as client's fittings and ignored from the point of view of building costs. In this instance the lab. fittings are an integral part of the design and therefore they are rightly shown as part of the overall cost.

Service elements: the amount of the building costs attributable to these elements appears surprising, unless one appreciates the complicated service requirements involved in catering not only for current usage but also for unspecified future commitments.

Element group	*Admin. block* s. d.	*Pot trials* s. d.	*Canteen* s. d.	*Process lab. and boiler house* s. d.
Prelims.	3 11¼	2 4	3 3¾	6 5¼
Structure	28 0½	30 11	30 3¾	47 9¾
Partitioning	5 7¾	2 9½	1 9½	3 11
Finishes	11 7½	4 8¾	11 0¼	3 6½
Fittings	17 3¾	3 7½	17 1¼	—
Services (exc. drains)	55 3¾	29 1¾	25 10¾	61 2¼
Total	121 10½	73 6¼	90 2¾	122 10¾

CONTRACTORS

Clerk of works: H. G. Horne. *General contractors:* J. Gerrard & Sons Ltd. *Sub-contractors: Felt tanking and roofing felt:* Ragusa Asphalte Paving Co. Ltd. *Precast concrete:* Saunders (Ipswich) Ltd., David Chaston Ltd. *Bricks:* Blockleys Ltd. *Windows, double glazing and sunblinds:* Holcon Ltd. *Patent glazing and rooflights:* Luxfer Ltd. and Lenscrete Ltd. *Wood-block flooring:* Hollis Bros. Ltd. *Central heating, ventilation and electric wiring:* Mathew Hall & Co. Ltd. *Boilers:* Davey Paxman & Co. Ltd. *Balustrades:* Craftmetal Ltd. and Bruce Gentles Ltd. *Door furniture:* Nettlefold & Moser Ltd. and Pryke & Palmer Ltd. *Roller shutters:* Sautter Contractors Ltd. *Kitchen equipment:* Benham & Sons Ltd. *Stonework, Derbydene flooring:* Nine Elms Stone Masonry Works. *P.v.c. floor:* Phoenix Rubber Co. Ltd. *Laboratory fittings:* Bair & Tatlock (London) Ltd. *Cloakroom fittings (lockers):* W. B. Brown & Co. Ltd. *Lifts:* Marryat & Scott Ltd. *Paint:* International Paints Ltd.

ROOFLIGHTS | TIMBER

The Architects' Journal Library of Information Sheets 661. Editor: Cotterell Butler, A.R.I.B.A.

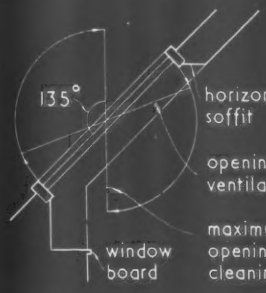
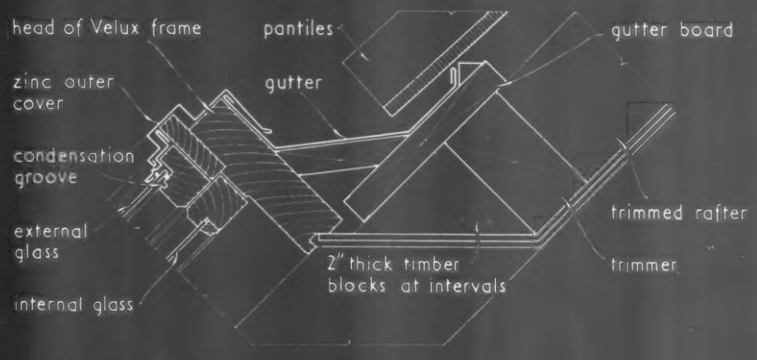


DIAGRAM SHOWING WINDOW IN POSITION.

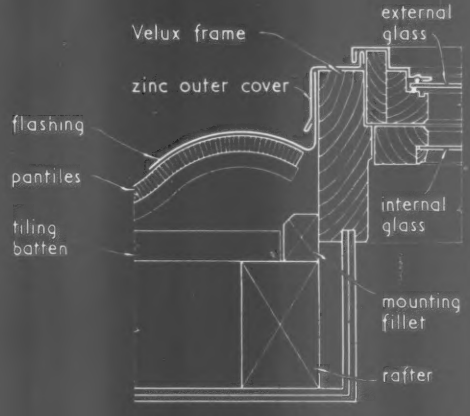
ISOMETRIC VIEW OF ROOFLIGHT FITTED IN SLATE ROOFING.
(plain tiles, built-up bituminous roofing, similar)

section through side (above pivot)



section through head

FIXING TO PANTILE ROOFING. (corrugated roofing similar)



section through side (below pivot)

·VELUX· ROOFLIGHTS Supplier : The Velux Company Limited

24.H1 ·VELUX· ROOFLIGHTS

This Sheet describes Velux double-glazed rooflights and shows their use with various types of roof covering.

Material and construction

The window is a double-glazed opening light horizontally centre-pivoted. The timber is first quality Swedish pine. All external surfaces are protected by 12-gauge sheet zinc with welted edges and lapped corners, soldered; the zinc is secured to the frame with brass screws and lead cups. The zinc sheet also provides the means of retaining the external glazing at top and sides. The lower edge is held by stainless-steel glazing clips; a flexible bronze weather-strip prevents the penetration of dust, etc. between the panes of glass and the rooflight is weather-stripped throughout. The coupled (inner) sash is bottom-hung. The window is supplied unglazed and without flashings.

Hinges: These are of patented design in pressed steel, cadmium-plated, and allow for the quick release of the window, when required, for glazing, etc. They also enable the window to be rotated through 135° for cleaning the external glass surface from inside.

Peg stay: The stay is of tubular chromium-plated brass section, with a black plastic knob, and 3 or 4 holes to engage with the fixtures.

Head locks: These are provided on all but the smaller windows and are located on each side towards the head of the window. They are fabricated from chromed brass bar section and finished with a black plastic knob. The locks should be secured whenever the window is closed.

Sizes

The following standard sizes are obtainable:

Reference No.	Overall width (ft. in.)	Overall height (ft. in.)
DG 9	1 9¼	2 3¼
DG 1	2 6½	3 2½
DG 2	2 6½	4 7
DG 11	5 1½	3 2½
DG 22	5 1½	4 7

Purpose-made windows can be supplied to individual requirements.

Fixing

The minimum pitch recommended for the rooflight is 30° and the maximum approximately 70°. Where the pitch exceeds 70° a chain or scissor stay should be provided. Where the roof slope is less than 30°, a shaped timber kerb should be fixed to the trimmers of the roof opening so that the rooflight can be set at an angle of 30°. Where an abnormal amount of rainwater is anticipated and on roofs of over 60° pitch generally, the manufacturer recommends a zinc upstand in the back gutter, extending the full width of the window, to lead the water off from the lead flashing. For domestic applications the rooflight should be placed towards the eaves to give an outlook and easy access for hand operation and cleaning; the minimum recommended height of the head from floor level is 6 ft. 6 in. The rooflights can be operated by various types of remote control gear.

Slates, plain tiles or built-up bituminous roofing: The typical rooflight shown on the face of the Sheet shows how it is incorporated in slates, plain tiles or built-up bituminous roofing. The roof opening should be prepared in such a way that a tile or tile-and-a-half course will abut the side of the window-frame and in any roof the aperture should provide a close fit round the frame. The flashing forming the gutter at the head is supported on a board and should extend 6 in. to 8 in. from the framing of the window; the roofing material should lap it at least 4 in. The section at the lower right of the isometric sketch shows the side fixing; the lead or zinc soakers should extend 4 in. minimum under the roof covering.

Pantiles or corrugated sheeting: The details on the lower face of the Sheet show the fixing to pantiles or corrugated sheeting. The gutter at the head falls 10° to 15° towards the window. The mounting fillet shown in the section through the side is supplied with all rooflights and can easily be removed when not required. The treatment at the bottom is similar to that shown for slates, etc., i.e., the apron is tucked under the zinc outer cover and dressed over the pantiles or sheeting. Flashings and aprons should extend at least 4 in. over the tiles or sheeting.

Linings: The inside edge of the window frame is grooved on all four sides to facilitate fixing of lining boards. A horizontal soffit is recommended to obtain maximum light, and for domestic applications the bottom should be finished vertically and with a window board.

Glazing

The following table gives the recommended thicknesses of glass for the various sizes of window:

Reference No.	Internal sash (oz.)	External sash (oz.)
DG 9	18	24
DG 1	18	24
DG 2	24	24—32
DG 11	18	24
DG 22	24	24—32

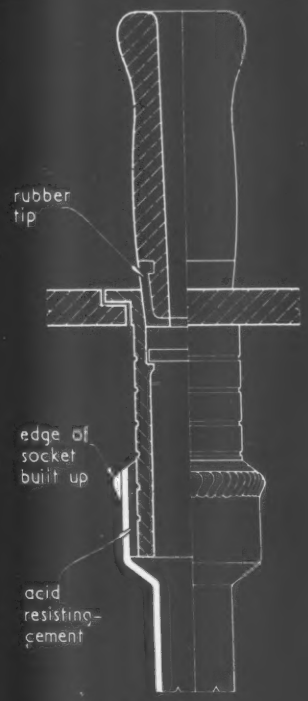
Internal: The glazing beads are removed and the glass bedded and back-puttied in the normal way. The beads are replaced and fixed by pins at 6 in. to 8 in. intervals, the first being 2 in. from the corner.

External: The glass should be cut to tight rebate sizes in width with a maximum tolerance of $\frac{1}{16}$ in. each side, and in height to tight sizes between the top rebate and the glazing clips with a maximum tolerance in the rebate of $\frac{1}{16}$ in. The zinc outer cover is removed and the glass placed on the sealing cords ensuring that the weather-strip is at the correct angle to form a seal with the glass. No putty or mastic compounds should be used; the zinc outer cover is replaced with the screws and cups provided.

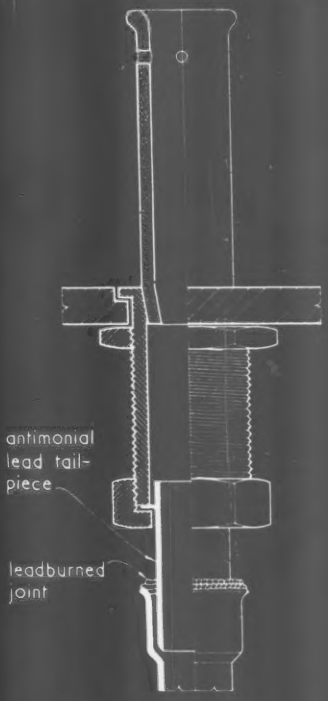
Finish

All timber surfaces are supplied primed one coat. Hinges, weather-strip and sealing cords must on no account be painted.

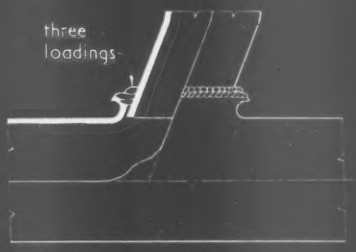
Compiled from information supplied by:
The Velux Company Limited.
Address: 167, Victoria Street, London, S.W.1.
Telephone: Victoria 3570, 8916.



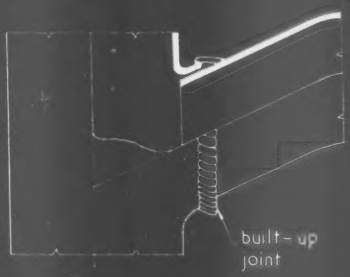
ceramic sink outlet



antimonial lead sink outlet

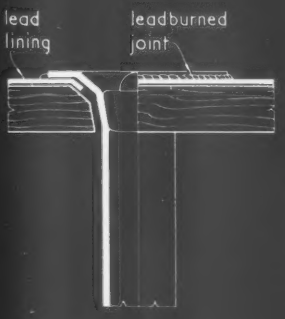


joint made in horizontal position

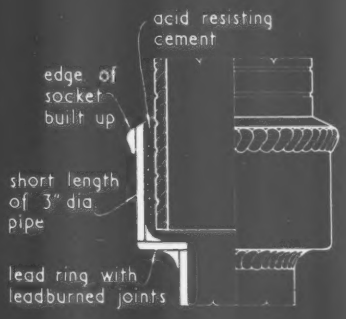


joint made in vertical position

BRANCH JOINTS.

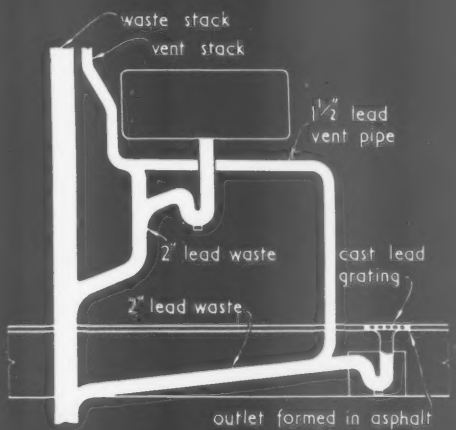


lead lined sink outlet

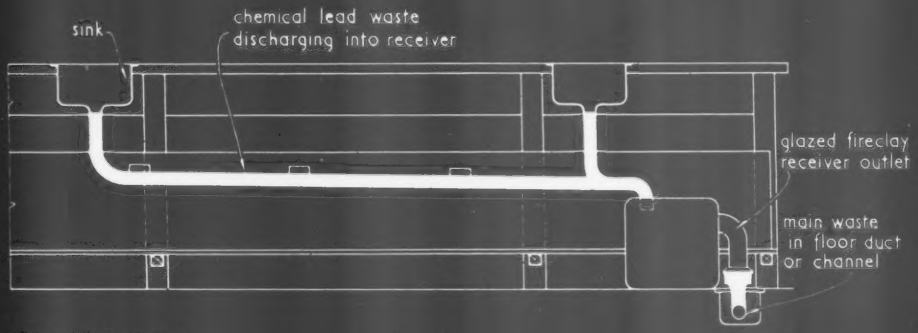


receiver outlet

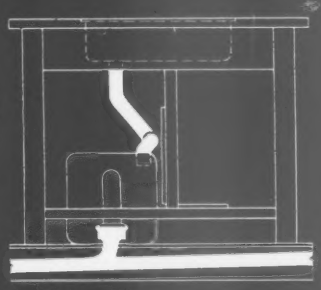
CONNECTIONS TO SINK AND RECEIVER.



SINGLE LABORATORY SINK.



longitudinal section



end elevation

RANGE OF LABORATORY SINKS.

LEAD PLUMBING FOR LABORATORIES.

Compiled from information supplied by Lead Development Association.

33.C11 LEAD PLUMBING FOR LABORATORIES

This Sheet summarises some common uses of lead sheet and pipe for laboratory plumbing.

For piping to carry away waste liquids from laboratory sinks, lead pipe is the accepted material for all common service conditions because of its general corrosion-resistant properties. Waste pipes from ordinary appliances should not be connected to a chemical waste system. To provide extra corrosion resistance to laboratory bench tops a covering of sheet lead is used and for some service conditions the lead-lined hardwood sink is preferred to the glazed fireclay form.

Materials

Lead sheet and pipe for laboratory plumbing should be specified as chemical quality. B.S.334 covers chemical lead of two forms:—

Type A—a high purity lead for use where the highest possible degree of corrosion resistance is required. It is most suitable for all general purposes.

Type B—a chemical lead which has higher fatigue resistance and may be considered where conditions of vibration and excessive thermal expansion and contraction exist.

Range of Laboratory Sinks

Discharging into fireclay receiver: In this arrangement, shown on the face of this Sheet, each sink waste (without trap) is connected to a lead main waste which discharges into a fireclay receiver. This arrangement is most suitable where a number of benches each with two or three sinks are sited in a regular manner and the connecting-up of wastes into common branches does not require complicated pipework. From the fireclay receiver the waste may discharge into an open channel of acid-resisting material or into a lead pipe housed in an open floor duct with removable cover.

Discharging into open floor channel: In this arrangement untrapped waste pipes, connected to the sinks, discharge into an open floor channel of glazed stoneware or asphalt which may be led into a glazed fireclay receiver acting as an interceptor between waste system and drain.

Single Laboratory Sink

With laboratory waste arrangements as described above, the waste pipes are not trapped immediately beneath each sink as this is unnecessary. Where possible, traps in waste pipes should be avoided because of the risk of corrosive sediment lying in them. With isolated sinks that are connected to a waste pipe serving ordinary appliances, traps are necessary and the pipes should be flushed down frequently with water after using. The traps should be fitted with antimonial lead (not brass) cleaning eyes. A waste outlet in the floor beneath an isolated laboratory sink may be necessary in order that the floor may be washed clean of any spilled corrosive liquid. A typical arrangement for a single sink is shown on the face of this Sheet.

Connections to Sink and Receiver

Outlets for glazed fireclay sinks: Special corrosion-resistant outlets are used, which may be of ceramic material or antimonial lead, as shown, or vulcanite. The connection between a ceramic outlet and a lead waste pipe is made by expanding the end of the pipe to form a socket and filling the annular space with acid-resisting mastic cement as shown. The alternative method of forming the lead socket is as described below under *Outlet to receiver*.

Vulcanite waste outlets include a lead tail-piece to which the lead pipe is jointed by leadburning, as with an antimonial lead outlet.

Outlet to lead-lined sink: The waste pipe is jointed direct to the sink lining by leadburning, as shown.

Outlet to receiver: The connection between the receiver outlet and a lead pipe is made by forming a socket on the end of the pipe and by filling the annular space with acid-resisting mastic cement. The socket may be formed by leadburning a short length of pipe of larger bore to the pipe, as shown, or by expanding the end of the pipe as described above for a connection to a ceramic sink outlet.

Running and Branch Joints

All running and branch joints must be leadburned.

Connection to Glass-lined Cast Iron Stack

If it is required to make a spigot socket connection between a lead laboratory waste pipe and a glass-lined cast iron stack the spigot entry is formed by passing the lead pipe through a brass ferrule to maintain continuity of lead (see Sheet 33.C6) and the annular space caulked with lead yarn.

Connection to Drain

Main waste pipes connect to the drain with a sealed back-inlet gulley.

Lead Linings to Sinks and Benches

A lead-lined hardwood sink may be preferred to the glazed fireclay sink in some instances, *e.g.*, for a separate sink for cleaning laboratory glassware or where experiments with hydrofluoric acid (which readily attacks ceramic glazes) are concerned.

The lining should be formed of not less than 6 lb. substance chemical quality sheet lead. The waste pipe is joined direct to the outlet by leadburning. Linings for bench tops should also be of 6 lb. chemical quality sheet lead and normally sufficient fixing is provided by dressing the edges over and under the edge of the bench.

Sizes and Weights of Pipes

The sizes and weights of lead pipe for laboratory wastes are, for normal work, commonly specified as follows:—

Int. dia. (in.)	1¼	1½	2	2½	3	3½	4
Wt. (lb./yd.)	7	9	12	14	17	20	23

Compiled from information supplied by:

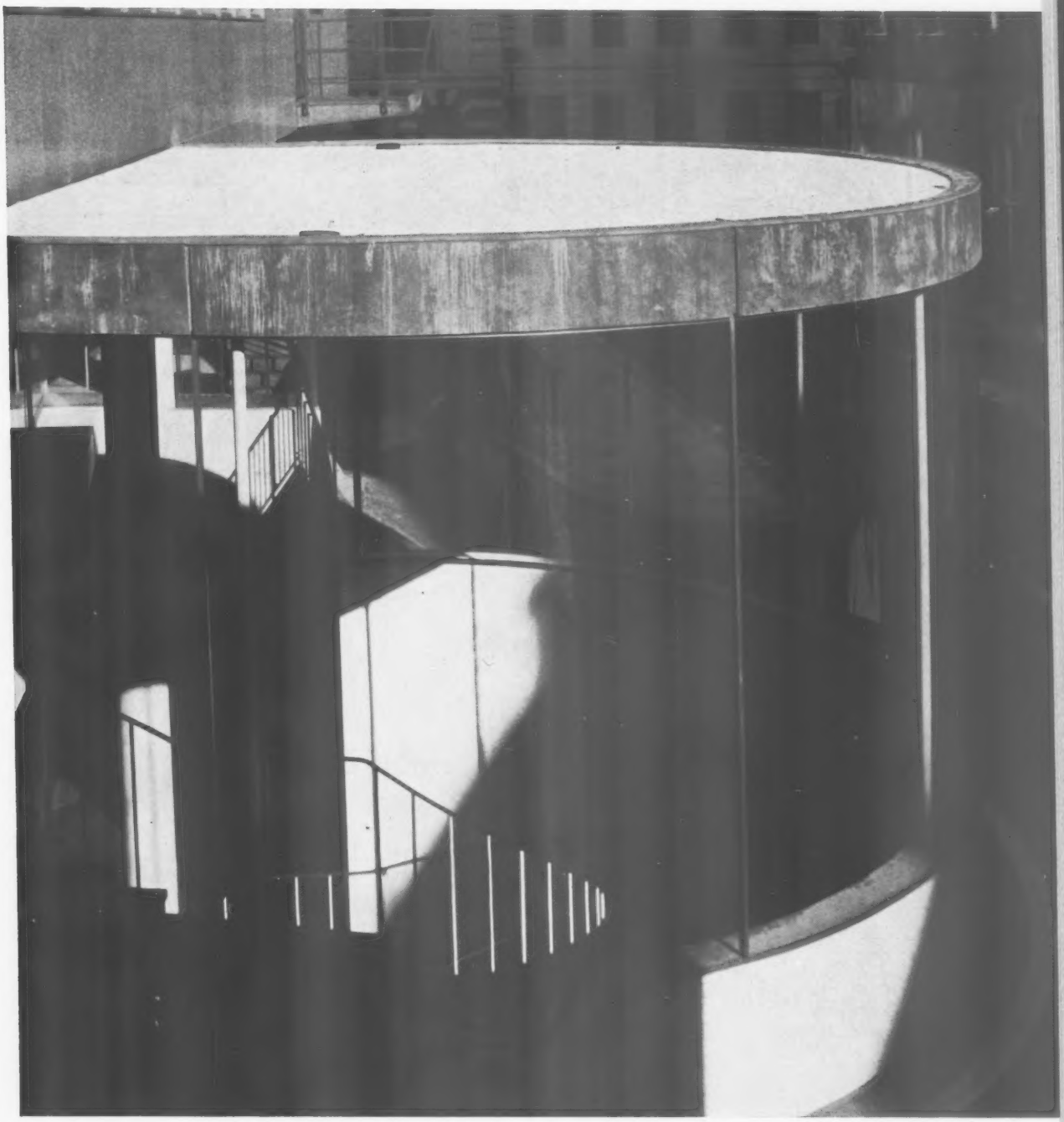
Lead Development Association.
Address : 18, Adam Street, London, W.C.2.
Telephone : Whitehall 4175.

working detail

STAIRCASES: 38

STAIRCASE ENCLOSURE: OFFICES IN LONDON, W.C.1

David du R. Aberdeen and Partners, architects

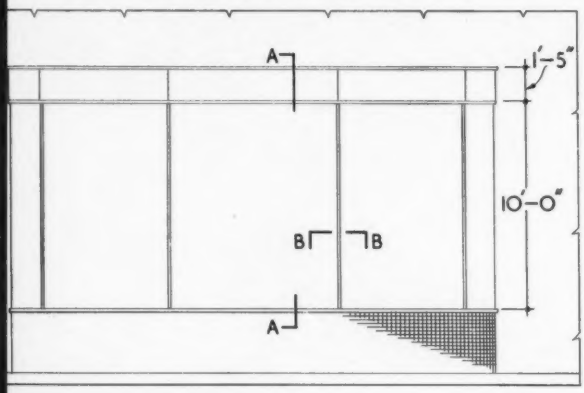


The horseshoe staircase connects a ground floor hall to a basement foyer. The curved polished plate glass is held in built-up bronze framing and the concrete stair drum is painted inside and finished on the exterior with vitreous mosaic.

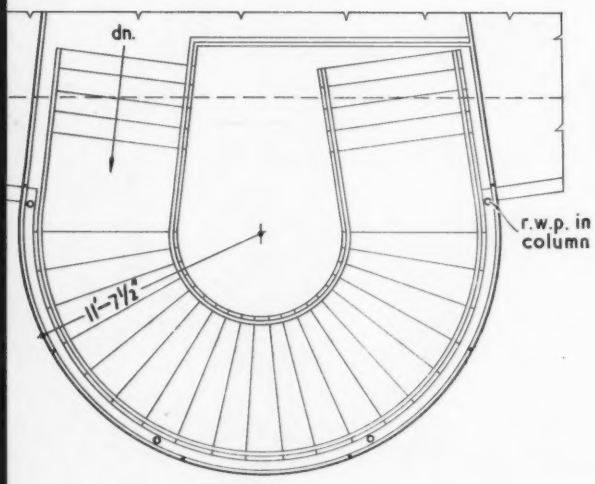
working detail

STAIRCASE ENCLOSURE: OFFICES IN LONDON, W.C.1

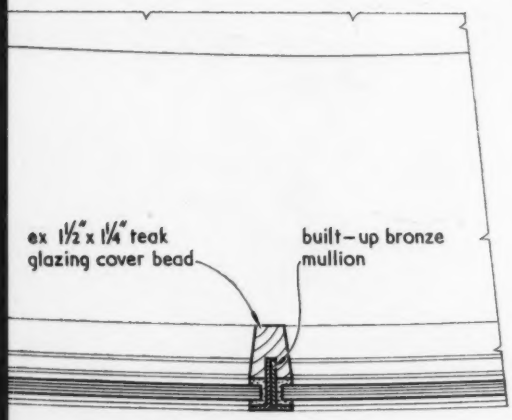
David du R. Aberdeen and Partners, architects



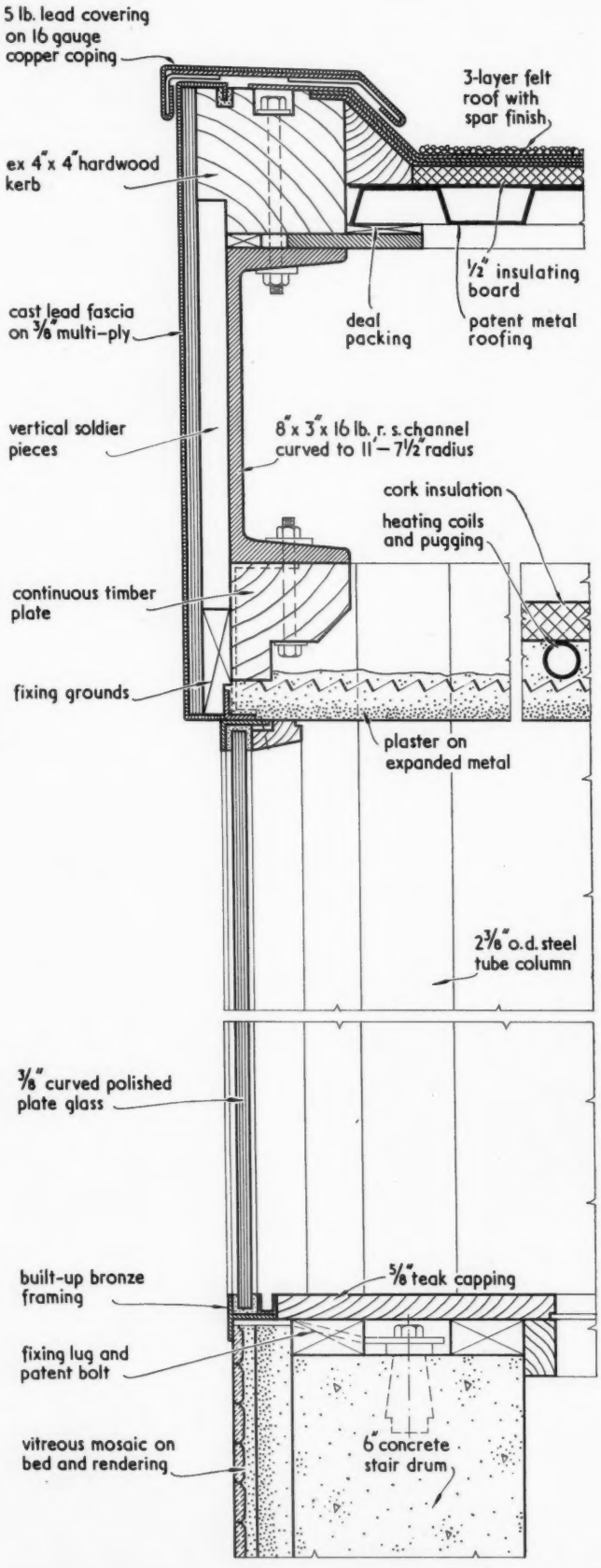
ELEVATION. scale 1/8" = 1'-0"



PLAN. scale 1/8" = 1'-0"



PLAN AT B—B. scale ¼ full size



SECTION A—A. scale ¼ full size

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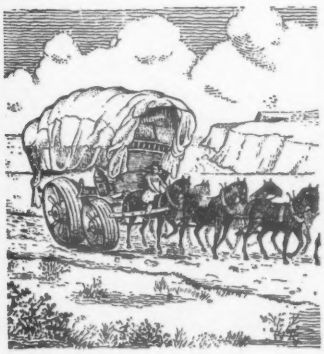
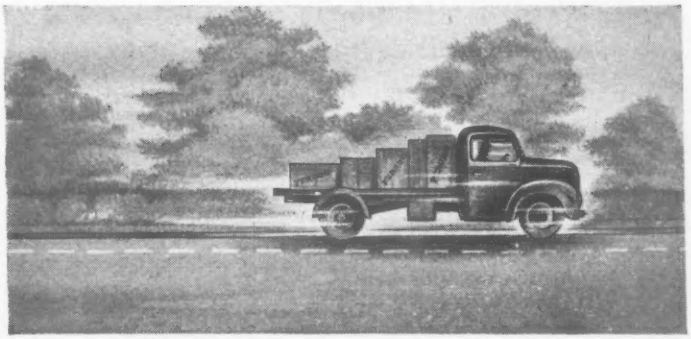


Sir Christopher Wren waited so long for deliveries of materials, but he expected nothing better. It was tough going for the teams of horses that drew the slow wagons of the 17th Century—the roads were deeply rutted and the wagons often overloaded.



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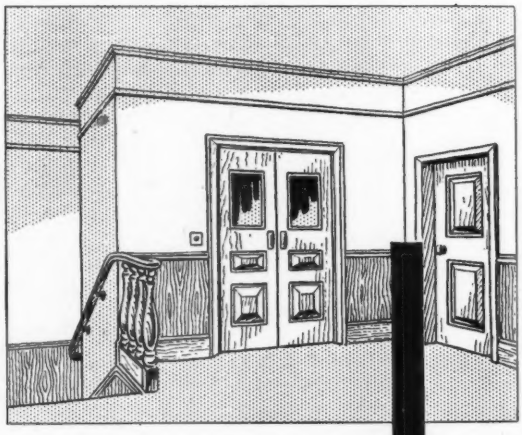

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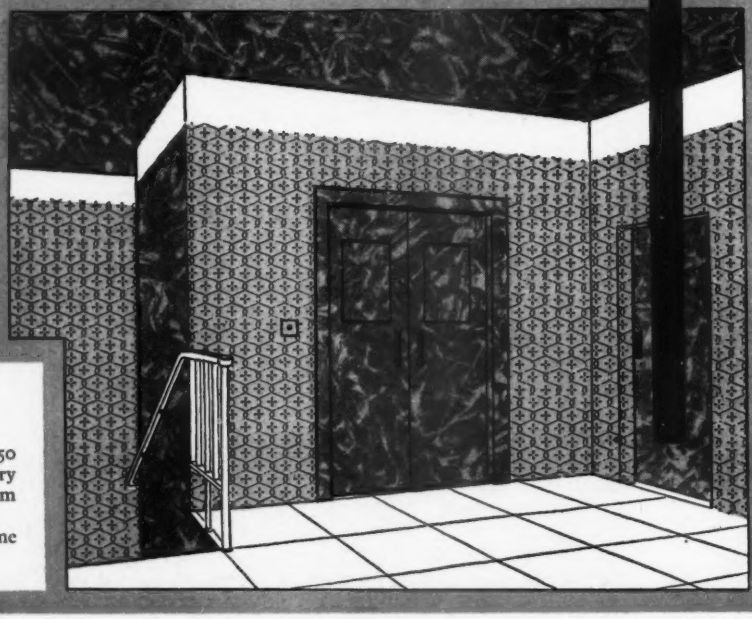

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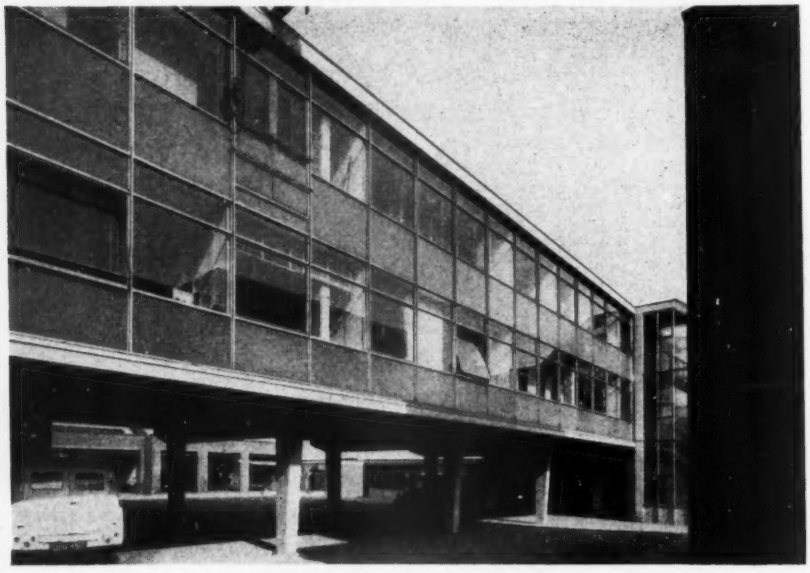
SAILING CLUBHOUSE AT ROCHDALE, LANCASHIRE

This small clubhouse for the Hollingworth Lake Sailing Club at Rochdale was built with interest-free loans and some wage-free labour from its members, who began building the clubhouse in 1950, on a small peninsular site at the corner of the harbour. The architects, Moir and Bateman, in conjunction with J. S. A. Young, designed the building for completion in three stages, and with an eye to possible extension as club membership grew. Members themselves stripped the site and laid the reinforced concrete raft over the area. In the first stage, 1950-54, the clubroom and ground floor changing rooms were built. In 1954 a kitchen and bar were added, and in 1956 a ground-floor committee room and first-floor women's changing rooms, showers and lavatories. The front of the clubhouse is largely glazed, the projecting starters' room being fronted with plate glass.

POLICE HEADQUARTERS AT BIRKENHEAD



Birkenhead's new police headquarters (designed by Willink and Dod, architect-in-charge J. E. Baldwin), which stands at right angles to the main Chester Road, was raised on piles over the parade ground to avoid costly excavations into rock and reduce the transmission of noise from rail and bus depots nearby. Because of street noises, the street elevation is mainly blank brickwork, while all main offices face north or west and are completely glazed. Below sill level there is dark-blue plyglass.

Announcements

PROFESSIONAL

W. H. Mercer, Chief Quantity Surveyor in the Kent County Council Architect's Department, is retiring this month. His successor will be J. Little, A.R.I.C.S., who will take up his new post in April and has, until recently, been Chief Surveyor in the Architect's Department of the Plymouth City Council.

David J. Dupree, A.R.I.B.A., A.A.DIP., has joined Godwin & Hopwood in Lagos, Nigeria. His address will be Godwin & Hopwood, Chartered Architects, 14, Berkley Street, P.M.B. 2148, Lagos, Nigeria.

Messrs. Mather & Nutter, A/A.R.I.B.A., have taken over the practice of the late Stanley Birkett, A.R.I.B.A., and will continue to practise from Portland House, 103, Portland Street, Manchester, 1 (telephone: Central 6061).

Ronald Fielding, A.R.I.B.A., of Aldwych House, London, W.C.2, has changed his phone number to Chancery 8201 (5 lines).

TRADE

Percy Bilton Ltd. announce that C. G. Linford-Ralph has resigned from the Board.

Howard Farrow Ltd. announce that their phone number has been changed to Medway 3232.

Correction

The manufacturers of the laminated timber arches in St. Columba's Church at Bolton, illustrated in the AJ for February 6, were William Kay (Bolton) Ltd., and not William Fry Ltd.

Ticket Office, Norwich Thorpe Station, B.R. ✻

Better Design with WARERITE Plastics —and a Better Fabrication service

You already specify WARERITE Plastics for hard wearing, attractive and maintenance-free surfaces. Now, for trouble-free, **permanent** veneering and **expert** fabrication, you should also specify "Veneering and Fabrication by a WARERITE *Specialist*".

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Write for a list of WARERITE Specialists.

✻ *The front panels of this Ticket Office are Grey Finaweave and Red Relief WARERITE Veneered Plywood. The interchangeable Destination and Class boards are WARERITE Pictorials.*

Architect: H. H. Powell, Esq., A.R.I.B.A., British Railways.

Contractors: J. Youngs & Son Ltd., Norwich.

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CLASSIFIED ADVERTISEMENTS

Advertisements should be addressed to the Advt. Manager, "The Architects' Journal," 9, 11 and 13, Queen Anne's Gate, Westminster, S.W.1, and should reach there by first post on Friday morning for inclusion in the following Thursday's paper.

Replies to Box Numbers should be addressed care of "The Architects' Journal," at the address given above.

Public and Official Announcements

38s. per inch; each additional line, 2s. 6d.

LONDON COUNTY COUNCIL
ARCHITECT'S DEPARTMENT

Vacancies for (1) ARCHITECTS, Grade III, starting salary up to £1,090 a year. (2) ARCHITECTURAL ASSISTANTS, starting salary up to £960.

Full and interesting programme of houses, flats, schools and general buildings.

Application form and full particulars from the Architect (AR/EK/5/58), The County Hall, S.E.1. (E3) 6741

LONDON TRANSPORT require the following staff for the Architect's Office:—

(*a*) ARCHITECTURAL ASSISTANTS, Class 2. Candidates must be qualified to R.I.B.A. Intermediate standard and have previous office experience.

Salary range: £790—£880 p.a.

(*b*) ARCHITECTURAL DRAUGHTSMEN. Candidates must show ability in Architectural drawing and be studying for the Examinations of the R.I.B.A. Some office experience an advantage.

Salary range: £360 p.a. at age 18 to £745 p.a., plus additional payments for certain recognised qualifications.

Medical examination; free travel.

Please apply within 7 days to Staff and Welfare Officer (F/EV 669 (*a*) or (*b*)), London Transport, 55, Broadway, S.W.1. 8835

CITY OF CHESTER
DEPARTMENT OF CITY ENGINEER

Applications are invited for the post of SENIOR ARCHITECTURAL ASSISTANT. Salary £1,030 per annum, *i.e.*, top of Special Grade for Architectural Assistants. Candidates should have passed the R.I.B.A. Final Examination, and be experienced in flat construction and high density redevelopment. Housing accommodation will be available for successful applicant if required. Applications with two testimonials should reach City Engineer, 49, Northgate Street, Chester, by Wednesday, 12th March, 1958. 8836

COUNTY BOROUGH OF IPSWICH
A Two-stage Architectural Competition for a Civic Centre at Ipswich

The Corporation of the County Borough of Ipswich invite architects registered under the Architects' (Registration) Acts and resident in Great Britain, Northern Ireland or the Republic of Ireland, to submit in competition designs for a new Civic Centre to include Municipal Offices, Civic Suite, Law Courts, Police Station and Public Hall to be erected in Ipswich.

The Assessor is Mr. S. Rowland Pierce, F.R.I.B.A., Dist.T.P.

Premiums:—

(1) Preliminary Stage—Six competitors will be selected to proceed to final stage. Each will receive the sum of £300. Last day for submitting designs, 25th August, 1958.

(2) Final Stage—The author of the design placed first will receive £1,200. Last day for submitting designs, 19th January, 1959.

Last day for questions, 19th May, 1958.

Conditions may be obtained from the Town Clerk, Town Hall, Ipswich, on or after the 17th March, 1958.

Deposit £2 2s.

An applicant for the Conditions must state his registration number or the number of the receipt issued to him by the Architects' Registration Council in respect of the admission fee.

J. C. NELSON,
Town Clerk.
8922

CITY OF BELFAST
ASSISTANT TOWN PLANNING OFFICER

Applications are invited from the above position in the City Surveyor's Department.

Applicants must be Members or Associate Members of the Town Planning Institute and should hold additional recognised qualifications in Architecture, Engineering or Surveying. Preference given to candidates having experience in the office of a Local Planning Authority, particularly in slum clearance and the preparation of development plans and in redevelopment work.

Salary: £1,250 × £50—£1,300 per annum (under review). The commencing salary will be fixed according to qualifications and experience. Superannuation contributions of approximately 6 per cent. of remuneration will be payable. Reciprocal pension arrangements exist between the Belfast Corporation and other Public Bodies.

Canvassing will disqualify.

Application forms, etc., may be obtained from Room 39, City Hall.

Completed applications must reach the undersigned by Friday, 21st March, 1958.

JOHN DUNLOP.
Town Clerk.

City Hall,
Belfast.
P.O. Box 234.
24th February, 1958. 8903

WEST SUSSEX COUNTY COUNCIL
COUNTY ARCHITECT'S DEPARTMENT

Applications are invited for the following appointments:—

(1) ARCHITECTURAL ASSISTANT, Grade II, A.P.T. Division (£725 × £30—£845). Commencing salary according to experience.

(2) ARCHITECTURAL ASSISTANT, Grade I, A.P.T. Division (£575 × £30—£725). Commencing salary according to experience.

Further particulars should be obtained from the County Architect, County Hall, Chichester, to whom all detailed applications must be submitted not later than 20th March, 1958.

T. C. HAYWARD,
Clerk of the County Council.

County Hall,
Chichester.
25th February, 1958. 8921

CITY OF BIRMINGHAM
CITY ARCHITECT'S DEPARTMENT

Applications are invited for the following permanent and superannuable posts at commencing salaries within the scales according to capabilities and experience.

(*a*) ASSISTANT ARCHITECTS, Special Scale, £750 × £40—£1,030.

(*b*) ARCHITECTURAL ASSISTANTS, Special Classes, Grade A.P.T. I £595 × £30—£745.

Scope for progressive design of Schools and Educational Buildings of many kinds, a variety of Civic Buildings, and Housing Schemes, including tall blocks of flats, maisonettes and shopping centres.

Applicants are required to have passed Parts I and II Final R.I.B.A. for posts (*a*) and Intermediate R.I.B.A. for posts (*b*) or to hold equivalent qualifications.

Five-day week. Medical Examination.

Applications, stating age, present position and salary, qualifications, experience and two referees to the undersigned by 21st March, 1958.

A. G. SHEPPARD FIDLER,
City Architect.

Civic Centre,
Birmingham, 1. 8924

GOVERNMENT OF NORTHERN IRELAND

Unestablished post of ASSISTANT ARCHITECT Class II in Ministry of Health and Local Government. Salary scale £780 (age 25)—£1,055 (age 34 and over) rising to £1,215. Candidates must be Registered Architects by examination with general experience and aptitude for research. Duties connected with housing, public health buildings and Town and Country Planning. Preference for ex-Servicemen. Application forms, obtainable from Director of Establishments, Room 271, Stormont, Belfast, should be returned by 21st March, 1958. 8926

CORPORATION OF LONDON
REQUIRE

PRINCIPAL ASSISTANT (permanent staff), BUILDING & ARCHITECTURAL SECTION of the City Surveyor's Office.

Commencing salary within scale £1,305—£1,440.

Applicant must be Associate Member R.I.B.A., and have general administration as well as technical ability.

Duties include maintenance and alteration of civic and commercial buildings, erection of new buildings and reporting to Committees.

Application in writing with names of three references to The City Surveyor, Guildhall, London, E.C.2, within 14 days. 8917

METROPOLITAN BOROUGH OF CAMBERWELL
BUILDING WORKS MANAGER
(Department of Director of Housing and Borough Architect)

Salary £1,220 by four annual increments of £55 to £1,440 (Grade "B" Joint Negotiating Committee's Scales). Car allowance is also payable. Applicants must either have held a similar position with another local authority or have had extensive experience with a large building contractor. They must be thoroughly experienced in building organisation, estimating, costing of building works and the purchase of plant and materials. Application form from Town Clerk, Town Hall, S.E.5. Closing date Monday, 24th March, 1958. 8918

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD
SENIOR ASSISTANT QUANTITY SURVEYOR

Applications are invited from corporate members of the R.I.C.S. (Quantities Section) for the appointment of Senior Assistant Quantity Surveyor to specialise in estimating and cost analysis for major works. Requires wide general experience, sound knowledge of economics of modern building techniques and ability to supervise staff. Salary scale £1,010 × £30 (5) × £35—£1,195 p.a. plus £50 London weighting.

Written applications, stating age, qualifications, experience, and names of two referees to Secretary, North West Metropolitan Regional Hospital Board, 11a, Portland Place, W.1, by 17th March. 8919

NATIONAL COAL BOARD
EAST MIDLANDS DIVISION
QUANTITY SURVEYING ASSISTANT, Grade I (£715 × £25 to £850—exceptionally £1,000).

Applications are invited for the position of Quantity Surveying Assistant Grade I in the Divisional Architect's Department, Nottingham.

Applicants should preferably have Intermediate R.I.C.S. or considerable practical experience.

Applications, giving age, qualifications, details of experience, present position and salary should be made in writing within 14 days to: Divisional Chief Staff Officer, National Coal Board, East Midlands Division, Sherwood Lodge, Near Arnold, Nottingham, quoting ref. number S.V.868. 8920

NORTHUMBERLAND COUNTY PLANNING DEPARTMENT

AREA PLANNING OFFICER required on A.P.T. V Scale (£1,175—£1,325).

A.M.T.P.I. essential. Additional qualifications in Engineering, Surveying or Architecture an advantage.

Application form and further information from County Planning Officer, County Hall, Newcastle-upon-Tyne, 1.

Closing date 15th March, 1958. 8880

BOROUGH OF RHONDDA

Applications are invited for the post of ASSISTANT ARCHITECT. Salary within Special Grade (£750 × £40—£1,030). Applicants must be Associates of the R.I.B.A., with a sound general experience of Municipal housing work.

The commencing salary in the grade will be dependent on candidate's previous experience.

The appointment will be terminable by one month's notice on either side, and will be subject to the National Scheme of Conditions of Service. The successful candidate will be required to pass a medical examination and will contribute to the Council's Superannuation Fund.

Housing accommodation will be provided for a successful married applicant.

Applications on Forms to be obtained from the Housing Architect, Mr. C. Gingell, A.R.I.B.A., A.R.I.C.S., 13, Ystrad Road, Pentre, Rhondda, accompanied by two recent testimonials, are to be sent to the undersigned, in plain envelopes endorsed "Assistant Architect," so as to arrive not later than Saturday, 15th March, 1958.

D. J. JONES,
Clerk of the Council.

Council Offices,
Pentre,
Rhondda.
26th February, 1958. 8892

WARWICKSHIRE COUNTY COUNCIL
ARCHITECT'S DEPARTMENT

Applications are invited for the following appointments:—

(A) DEPUTY GROUP ARCHITECT, A.P.T. IV, £1,025—£1,175.

Applicants must be members of the Royal Institute of British Architects, and be competent designers and have a good knowledge of modern methods of construction. They must also be capable of handling large building projects from sketch plan to completion. The person appointed will be allocated to the group dealing with primary school buildings.

(B) ASSISTANT ARCHITECTS, Special Grade, £750—£1,030.

Applicants must have passed Parts I and II of the R.I.B.A. Final or Special Examinations or their equivalent at one of the recognised schools of architecture. The successful applicants will work in teams on large projects but opportunity will be given to men with enthusiasm and ability to design and carry out smaller projects under the group architect.

(C) ARCHITECTURAL ASSISTANTS, A.P.T. I, £575—£725.

Applicants must have passed the Intermediate examinations of the R.I.B.A. or the equivalent at one of the recognised schools of architecture.

In each case the commencing salary can be within the grade according to ability and experience.

The appointments are on the established staff and subject to the Scheme of Conditions of Service of the National Joint Council for Local Authorities and the Local Government Superannuation Acts, 1937-53. The Council is unable to offer housing accommodation but consideration will be given to the granting of financial assistance towards removal expenses.

Applications are to be on forms which can be obtained from G. R. Barnsley, F.R.I.B.A., County Architect, Shire Hall, Warwick.

L. EDGAR STEPHENS,
Clerk of the Council.

Shire Hall,
Warwick.
February, 1958. 8882

COUNTY BOROUGH OF SUNDERLAND
PUBLIC WORKS DEPARTMENT
MEASURING AND BONUS SURVEYOR

Required for Building and Civil Engineering new and maintenance works. Experience of site measurement essential. Some experience of negotiating and running incentive bonus schemes an advantage.

Salary scale A.P.T. III (£845 to £1,025 p.a.).

Applications stating age, qualifications and brief details of experience, must be addressed to me and received at my Office, Town Hall, by 17th March, 1958.

Canvassing will disqualify.

The Corporation cannot undertake to provide housing accommodation.

G. S. McINTIRE,
Town Clerk.
8895

QUANTITY SURVEYOR

A vacancy exists on the staff of the Chief Civil Engineer, British Railways, York, for a Quantity Surveyor experienced in building and civil engineering quantity surveying.

Applicants should be corporate members of R.I.C.S. (Quantities Division).

Commencing salary £916 per annum within range £916—£956.

There is also opportunity for JUNIOR interested in pursuing career in Quantity Surveying.

Applications in writing, giving age, qualifications, etc., to Chief Civil Engineer, British Railways, North Eastern Region York. 8877

BOROUGH OF WREXHAM

Applications are invited for the following appointment :—

ARCHITECTURAL ASSISTANT — Salary A.P.T. I (£575—£725 per annum).

Forms of application and particulars obtainable from Borough Surveyor, 31, Chester Street, Wrexham.

Applications to the undersigned by 12 noon on Monday, the 24th March, 1958.

PHILIP J. WALTERS,
Town Clerk.

25th February, 1958. 8925

CARSHALTON URBAN DISTRICT COUNCIL

ARCHITECTURAL ASSISTANT, Engineer & Surveyor's Department. Must hold R.I.B.A. Intermediate Examination Certificate and have had good training, be experienced in detailing and a competent draughtsman. Salary within scale range £725—£845 p.a. plus London weighting (£30 at age 26).

Carshalton has a population of 63,000 and has a large and varied programme of building works.

Application forms, obtainable from the undersigned, must be returned, with names and addresses of three referees, not later than Monday, 17th March, 1958.

Canvassing will disqualify.

C. H. DURRANT,
Clerk of the Council.

Council Offices,
The Grove,
Carshalton, Surrey. 8898

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(*Principal:* W. E. DUNCANSON, Ph.D., D.Sc., F.Inst.P., A.M.I.E.E.)

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in the Department of Architecture, Town Planning and Building.

The College prepares students for the examinations of the R.I.B.A. and of the T.P.I.

Qualifications: Associate Membership of the appropriate Institute or equivalent qualification; at least one year's teaching desirable; three years' practical experience essential.

Appointment may be accepted on contract for five years or on pension or arrangements to continue policies initiated under the F.S.S.U. Scheme might be made.

Contract salary scale: £1,230 × £60—£1,950 p.a. plus gratuity payable at end of contract at the rate of £12 10s. for each month of satisfactory service.

Pensionable and F.S.S.U. salary scale: £925 × £50—£1,625 p.a.

Point of entry according to experience.

Children's allowances up to maximum of three at the rate of £50 per annum per child up to 10 years and £100 per annum per child over 10 years in full-time education up to 21 years.

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Applications (6 copies) giving age, education, qualifications, experience and the names of three referees should be sent to Council for Overseas Colleges, 12 Lincoln's Inn Fields, London, W.C.2. Closing date 20th March 1958. 8878

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD
SENIOR ASSISTANT ARCHITECT

Applications are invited from Associate Members of the R.I.B.A. for the post of Senior Assistant Architect. The Board are engaged on a number of new building projects including a new hospital at Welwyn. Applicants must have had considerable experience in design and construction, preferably in hospitals and associated buildings.

Salary scale £1,010 × £30 (5) × £35 (1)—£1,195, plus £50 London weighting.

Apply, giving age, qualifications and experience, together with names of two referees, to Secretary, North West Metropolitan Regional Hospital Board, 11a, Portland Place, W.1, by 18th March. 8884

BRITISH RAILWAYS—EASTERN REGION

Applications are invited for the following vacancies in the office of the Architect, Eastern Region, Kings Cross Station :—

ASSISTANT ARCHITECT. Salary range £916—£956. Applicants should be qualified with ability in contemporary design and some years' practical experience.

ASSISTANT ARCHITECT. Salary range £809—£877. Applicants should be qualified with some practical experience or should have passed the Intermediate R.I.B.A. examination with several years' practical experience.

The successful applicants will be engaged on varied and interesting work in connection with the Modernisation Plan and will be given opportunities for freedom in design and site supervision. Five-day week and concessionary rail travel and permanency to suitable candidate. Canteen facilities. Apply in writing giving particulars as to age, experience and qualifications (if any) to Chief Civil Engineer, British Railways, Eastern Region, Kings Cross Station, London, N.1. 8881

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NEWFOUNDLAND, CANADA

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PLANNING ASSISTANT

at a salary of $5,000 per annum.

Duties will include survey and analysis for City Development Plan. Re-zoning and implementation of development control. The appointment offers scope for independent and responsible work.

Applicants must have considerable practical experience, preferably in a local Government Office and should possess professional qualifications.

Appointment will be on a contract for two years in the first instance. Passage will be paid for the selected officer.

Please reply by Air Mail to the undersigned with details of age, experience, present salary and qualifications together with copies of recent testimonials before 15th April, 1958.

ROY W. BALSTON,
A.R.I.B.A. A.A. Diploma.
City Planning Officer.

City Hall,
St. John's,
Newfoundland. 8879

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JUNIOR ASSISTANT required for general Architectural practice in S.W. London. Maximum commencing salary £7 per week. Reply with full particulars to Box 8838.

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